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TITLE: One component room temperature curable sealant composition

Abstract Text (1):

A <u>one component</u> room temperature curable sealant <u>composition</u> comprising:

Brief Summary Text (3):

The present invention relates to a one component room temperature curable sealant composition Particularly, it relates to a one component room temperature curable sealant composition which is useful as a sealing material, an adhesive or an injection molding material and which exhibits good adhesion to various substrates including metal, glass and coated steel sheets and plastics such as a vinyl chloride resin, an acrylic resin or a styrol resin, without requiring a primer coating. More particularly, the composition of the present invention is widely useful as a sealant for various applications, for instance, for sealing the joint of interior or exterior building structures, repairing cracks in mortar or concrete structures, fixing the windshields of automobiles, sealing seams of joined steel sheets, etc., and it can advantageously be applied directly to substrate surfaces such as metal, glass, melamine and acrylic resin surfaces without employing a primer.

Brief Summary Text (5):

As a one component room temperature curable sealant, a silicone or polyurethane sealant is well known. The silicone sealant has advantages such that it has good weather resistance and heat resistance, and its curing speed is high and yet its storage stability is good. On the other hand, it has disadvantages such that a coating composition is hardly applied onto a cured silicone sealant, and it is likely to stain stone materials. Whereas the polyurethane sealant has advantages such that it is superior to the silicone sealant in the curing properties, and it has good comparability with a coating composition and its production costs are relatively low. On the other hand, the polyurethane sealant has drawbacks such that it is inferior in the weather resistance and heat resistance, and its storage stability tends to be poor when it is made to have a high curing speed.

Brief Summary Text (7):

Heretofore, with respect to a one component room temperature curable composition for a sealing material, a coating material, an adhesive and an injection molding material, there has been proposed a composition comprising (A) an addition product of a polyether urethane prepolymer having terminal isocyanate groups and common-propyltrimethoxysilane and (B) a small amount of

N⁻. beta.(aminoethyl)-.gamma.-amino propyltrimethoxysilane (Japanese Examined Patent Publication No. 5061/1978) as the material contoxining as the basic component a polyether polymer having a hydrolyzable silicone functional group as its terminal group.

Brief Summary Text (8):

Further, there has been proposed a composition containing as the main component an oxypropylene polymer having a terminal silylether group represented by the formula: ##STRS## (Japanese Unexamined Patent Publications No. 156599/1975 and No. 73998/1977).

Brief Summary Text (9):

However, these <u>compositions</u> had a disadvantage such that they are hardly bonded to the above-mentioned substrates without a primer coating.

Brief Summary Text (10):

DBTL and 29. g of TDI in 152 g of acctone for 1 hour at 65° having an OH number of 45 were reacted with 0.15 g of 565.5 g of a polyester of adipic acid and butanediol, 65

z sidwexa

K value in MMP: 44 Viscosity: 373 mPa.s TD: 62

Analytical data: Acrylate content: 0.86 mol/kg solid The acetone was distilled oll under reduced pressure. mixture was dispersed with 1200 g of demineralized water.

I mol of bisphenol A bisglycidyl ether were added and the accione solution of an adduct of 2 mol of acrylic acid with 17.9 g of 25% strength NaOH, 380 g of a 50% strength 50° C., the NCO value was 0.6%. After neutralization with 2 hours. After dilution with 880 g of sectone and cooling to 27.5 g of neopentylglycol and 140.8 g of TDI at 110° C. for AYMO to g 4.15 LITHO to g 2.0 thin basics rescree by DBTL, 21.4 g of DMPA, 530 g of a polypropylene oxide diol baving an OH number 45

disperse phase P.la

Preparation of a polyurelbane dispersion containing a

EXYMPLES

tion resistance.

make it possible to produce bonds having high heat distordistinguished in particular by the fact that they are stable and 35 The adhesive bonds produced by these methods are atter joining.

heated to about 50°-100° C. immediately before, during or pieces which are provided with a dried adhesive film are Particularly strong adhesive bonds are obtained if work- 30

drymg. pressure, either before drying of the dispersion film or after preferably joined to another workpiece with application of For processing as an adhesive, the coated workpieces are

Sarynb spraying, rolling or knife coating and then carrying out industries, ie. by applying the dispersions to the substrate by the methods usually used in the adhesives and coating

The novel polyurethane dispersions can be processed by san Sanard pag paper, leather or textile, and for the production of moldings costing of different substrates, such as wood, metal, plastics,

They are suitable, for example, for adhesive bonding or thixotropic agents and colorants, such as dyes and pigments. as blowing agents, antitoans, emulsifiers, thickeners and 15 alkyd resins, and commercial assistants and additives, such mer resins, polyurethanes, polyester resins, epoxy resins or water-emulsifiable or water-dispersible resins, such as poly-

The novel polyurethane dispersion may contain further alcobol and a C_2 – C_{10} -thiomonocarboxylic acid, eg. pen-taetythnityl tetrakis-3-metreaptopropionate. dismines or triamines, and polyesters of a C-C10-alkyl Suitable compounds (VII) are araliphatic C₀-C₂₀polyamines or aliphatic C₄-C₂₀ polyamines, preferably

Such dispersions are generally known and are described for example in EP-A-467 908. the compound (V.II) is dispersed in water by being stirred in sisting materials. Usually, the mixture of the polymer and

of the polymerization, during the polymerisation or to the

number of 56, 0.5 g of DBTL, 30.9 g of neopentylglycol and HO as garved loib obixo enslyqorqyloq to g 1.295.

Example 5

disperse phase P.II Preparation of a polyurethane dispersion containing a K value: 32

6.7 :Hq Viscosity: 38 mPas

TD: 64

LC: 40%

Analytical data: Acrylate content: 2 mol/kg solid

bicsenic and the solids content was brought to 40%. meralized water. The acctone was distilled off under reduced water and dispersing was carried out with 1200 g of demwas effected with 6.4 g of NaOH in 20 g of demineralized to 50° C. The NCO value had decreased to 0. Neutralization effected with 977 g of acctone and the mixture was cooled with 123.5 g of TDI for 1 hour at 110° C. Dilution was pizglycidyl ether (Mn=330) were initialy taken and reacted adduct of 2 mol of acrylic acid with 1 mol of 1,4-butanediol DMPA, 0.1 g of dimethylhydroquinone and 269.7 g of an sthylene glycol (OHN=42), 0.5 g of DBTL, 21.45 g of

385.3 g of a polyesterdiol obtained from adipic acid and Example 4

K value: 33 7.8 :Hq Viscosity: 380 mPas

TD: 01

EC: 402º Analytical data:

Acrylate content: 0.2 mol/kg solid was distilled off under reduced pressure.

carried out with 1200 g of demineralized water. The accione dissolved in 20 g of demineralized water and dispersing was 0.48%. Neutralization was effected with 6.4 g of NaOH 878 g of acetone and cooling to 50° C., the NCO content was continued for a further 2 hours at 90° C. After dilution with hydroxychy) acrylate were added and the reaction was 25 sectone, 0.1 g of hydroquinone dimethyl ether and 18.6 g of reacted with 139.9 g of TDI for 2 hours at 110° C. 100 g of

DBTL, 21.5 g of DMPA and 14.8 g of neopentylglycol were 605.2 g of polypropylene oxide diol (OHN=56), 0.5 g of Exemple 3

K value: 69 8.8 :Hq Arecostil: 20 mPas

TD: 25 LC: 40%

Analytical data: Acrylate content: 0.826 mol/kg brought to a solids content of 40%.

to been distilled off under reduced pressure, the mixture was with 1200 g of demineralized water. After the acctone had bisglycidyl ether were added. Dispersing was then effected A fonsity of 2 mol of serylic acid with one mol of bisphenol A salt, and 380 g of a 50% strength accione solution of an GUT 10 g 0.05%. Chain extension was carried out with 40.9 g of PUD the mixture was cooled to 50° C. The NCO value was minutes. Dilution was effected with 609.9 g of accione and mixime was kept at this temperature for a further 37 C. Theresfier, 28.6 g of HDI were metered in and the

As additives to improve the adhesion of the polyether polymer having at its terminal a hydrolyzable silicone functional group, there have been known a phenol resin, an epoxy resin (Japanese Unexamined Patent Publications No. 73729/1977 and No. 156599/1975), a polyisocyanate compound having an active isocyanate group (Japanese Unexamined Patent Publication No. 73729/1980) and a triazine ring compound (Japanese Unexamined Patent Publication No. 34154/1982). However, these additives do not necessarily provide adequate effectiveness and have drawbacks such that they are inferior in the water-resistant bonding and durability, whereby there have been problems such that stabilized bond strength is hardly obtainable due to restrictions with respect to the curing catalyst or the mixing conditions, and that no adequate storage stability is obtainable as a one component sealant.

Brief Summary Text (13):

The present inventors have conducted extensive researches to overcome the above-mentioned drawbacks of the conventional sealants and to provide a one component room temperature curable sealant composition which can be applied to various substrates without requiring a primer and which, at the same time, has good water-resistant bond strength, durability and storage stability. As a result, the present invention has been accomplished.

Brief Summary Text (14):
Namely, the present invention provides a <u>one component</u> room temperature curable sealant <u>composition</u> comprising the following components (A), (B) and (C):

Brief Summary Text (33):

The organic titanic acid ester (e) in the present invention serves to substantially improve the bonding when used in combination with the aminoalkoxysilane (a). As specific examples of the organic titanic acid ester, there may be mentioned tetraisopropyl titanate, tetra-n-butyl titanate, butyl titanate dimer and tetra (2-ethylhexyl) titanate. The organic titanic acid ester (e) is added in an amount of from 0.1 to 1.2 mols, preferably from 0.3 to 1.0 mol, relative to the aminoalkylalkoxysilane (a). Stabilized bonding will be hardly obtainable if the amount of the organic titanic acid ester is less or more than the above mentioned range.

<u>Brief Summary Text</u> (35): The amount of the partial addition condensation product obtained by the reaction of these materials, is preferably within a range of from 0.5 to 10 parts by weight relative to 100 parts by weight of the polyether polymer (A) having a hydrolyzable silicone functional terminal group; If the amount is less than 0.5 part by weight, no adequate effectiveness of the addition is obtainable. On the other hand, if the amount exceeds 10 parts by weight, the curing properties of the sealant composition tend to be impaired and the cost will be increased.

Brief Summary Text (38):

Further, an oxide of a metal belonging to Group II of Periodic Table such as zinc oxide, calcium oxide or magnesium oxide and/or an organic primary amine such as xylylenediamine, hexamethylenediamine or octylamine may be incorporated to the sealant composition of the present invention, as a co-catalyst to adjust the curing speed, as the case requires.

Brief Summary Text (39):

Furthermore, a filler, a plasticizer, a pigment, an aging-preventive agent, a ultra violet ray absorbing agent or a viscosity controlling agent may also be added to the composition of the present invention depending upon the particular purpose of the composition.

Brief Summary Text (41):

As the plasticizer, there may be used commonly employed plasticizers, for instance, phthalic acid esters such as dioctylphthalate, dibutylphthalate or butyl benzyl phthalate; aliphatic dibasic acid esters such as dioctyl adipate, isodecyl succinate or dibutyl sebacate: glycol esters such as eithyleneglycol dibenzoate or pentaerythritol ester; aliphatic esters such as butyl oleate or methyl acetylricinolate; phosphoric acid esters such as tricresyl phosphate or trioctyl phosphate; and chlorinated paraffins. Further, a liquid resin having a molecular weight of from 100 to 10,000 may be used as the plasticizer. As such a liquid resin, there may be mentioned a xylene resin, polybutadiene, polyoxypropylene glycol, polyoxypropylenetriol, a polyester resin, an acryl oligomer, NBR, SBR or polysulfide rubber.

Detailed Description Text (6):

of 5

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0.5N/mm2 for 30 seconds at 80° C.

(20 cm×3 cm) by means of a knife coater and dried for 3 65 minutes at 60° C. An ASA film was then pressed on at each applied in a thickness of 2 mm to 5 hard particle boards The dispersions were thickened with 2% of Collseral VL, I were investigated by the following method:

The adhesive properties of the dispersions stated in Table STIOIS

Testing of the performance characteristics of the disperdried for 3 days at 40° C. K value of the film; undissolved. mixime: 44.3. The mixime was east as a film, which was dispersion from Example 6 were mixed. K value of the 100 g of the dispersion from Example 4 and 181.2 g of the

Example 8

undissolved particles.

A film was cast and was dried for 3 days at 40° C. K value: 50 acrylate groups were present. K value: 45.6 mixed in ratios such that equivalent amounts of 5H and The dispersions from Example 1 and Example 5 were

Example 7

Preparation of the dispersions containing P.Ia and P.II K value: undissolved

> 0.8 :Hq Viscosity: 113 mPas

86 :CT

LC: 40% Analytical data:

Thiol content: 0.4 mol/kg

brought to a solids content of 40%.

water, the acctone was distilled off and the dispersion was 45% strength solution of polyacrylic acid (pH=7) in 30 g of accione were added dropwise. After the addition of 8 g of a meralized water, financiately theretists, 78.2 g of penson is a focult ratio of 2505-7, using a rotational riconneter training for the construction of the constructio was effected with 6.4 g of NaOH in 20 g of demineralized to 50° C. The NCO value was now 0.67%. Neutralization TD1 for 50 minutes at 110° C. Thereafter, dilution was effected with 977 g of acctone and the mixture was cooled 30.3 C.731 thin based over reacted with 167.7 g of ethylene glycol (OHN-42), 0.5 g of DBTL, 21.4 g of DMPA 572.3 g of a polyesterdiol obtained from adipic acid and

Example 6

К мајле: 44 4.8 :Hq

Viscosity: 290 mPas LD: 97

EC: 32% Analytical data:

SH content: 0.24 mol/kg solids content of 35%.

under reduced pressure and the dispersion was brought to a accione were added dropwise. The accione was distilled off pentacrythrityl tetrakis-3-mercaptopropionate in 100 g of water. Immediately after the end of dispersing, 46.9 g of dispersing was carried out with 1200 g of demineralized tion was effected with 17.9 g of 25% strength NaOH and cooling to 50° C., the NCO content was 0.5%. Neutralizahours at 110° C. After dilution with 977 g of acctone and 215 g of DMPA were reacted with 152.5 g of TDI for 2

amino groups and secondary amino groups. from the group consisting of the thiol groups, primary (V.I) and which carries a plurality of groups selected differs from the compounds (PUR.1s), (PUR.1b) and II) a disperse phase (P.II) containing a compound which

Stonb pouqeq queetly therewith and which the double bond is activated by a carbonyl groups which have a C-C double bond and in thanes PUR.1s and PUR.1b, and which carries a compound (V.I) which differs from the polyuregroup bonded directly therewith and

which the double bond is activated by a carbonyl not groups which have a C-C double bond and in impart water dispersibility to the polyurethane but a polyurethane (PUR.Ib) which carries groups which

vated by a carbonyl group bonded directly therewith, double bond and in which the double bond is seti-

polyurethane, carries groups which have a C-C groups which impart water dispersibility to the Is) a polyurethane (PUR.1a) which, in addition to I) a disperse phase (P.I), containing

crosslinking properties and containing I. An aqueous polyurethane dispersion having latent

We claim:

967. The solvent used was N-methylpyrrolidone. Edition, John Wiley & Sons, Inc. 1983, Volume 23, page Kirk-Othmer, Encyclopedia of Chemical Technology, Third The K value was determined by the method described in water with a path length of 2.5 cm and at room temperature. of 0.01% by weight was determined relative to distilled 35 purpose, the turbidity of a dispersion having a solids content indirectly by means of turbidity measurements. For this

The particle size of the latex particle (LD) was determined diameter: 42.0 mm).

> FC-solids content DMPA-dimethylolpropionic acid DRIF-dibutylin dilaurate

scid and ethylenediamine PUD salt-sodium salt of the Michael adduct of acrylic HDI-pexsmethylene diisocyanate TDI-toluylene diisocyanate

> B14=1,4-butancdiol OHM-hydroxyl number

Abbreviations

06 × t :08 × + 09 × + 09 × +	dxemple 4 Exemple 8 Exemple 8	s
Heat distortion O' ai soastsien		_

LYBUE 1

just less than 50 mm was stated as the neat distortion maximum temperature at which the pecling distance was temperature was increased by 10° C. every 30 minutes. The loaded with a weight of 300 g at a pecl-off angle of 180°. The resistance was tested. For this purpose, the ASA film was of the peeling strength. After 24 hours, the heat distortion

resistance.

Preparation of a sealant composition

Detailed Description Text (8):

Then, the above-mentioned operation was repeated to obtain two compositions having the same formulation. To the respective compositions, 1 part of the above-mentioned condensation product (b.sup.1) or (b.sup.2) as the partial addition condensation product (B) and 1 part of dibutyl tin acetate as the condensation catalyst (C) were added, and the mixtures were stirred for 30 minutes in a nitrogen stream, whereby 2 sealant compositions were obtained. These sealant compositions were put in sealed containers, respectively, and stored.

Detailed Description Text (10):

The compositions of the present invention prepared in the above-mentioned manner were respectively coated on an aluminum plate, a glass plate, a melamine-coated steel plate and a hard polyvinyl chloride resin sheet in a bead pattern having a thickness of 5 mm, a width of 10 mm and a length of 100 mm to obtain test pieces. These test pieces were cured at 20.degree. C. under a relative humidity of 65% for 7 days at room temperature.

Detailed Description Text (15):

Sealant compositions were prepared in the same manner as in Example 1 except that instead of the condensation product (b.sup.1) or (b.sup.2), .gamma.-aminopropyltriethoxysilane or Epikote 828.RTM. was incorporated. The adhesion

and peeling tests were conducted in the same manner as in Example 1. The results are shown in Table 1.

Detailed Description Text (20):

Then, eight sealant compositions were prepared in the same manner as in Example 1 except that instead of the condensation product (b.sup.1) or (b.sup.2) used in Example 1, condensation products (b.sup.3) to (b.sup.10) of Table 2 were respectively used. The sealant compositions were subjected to the adhesion and peeling tests in the same manner as in Example 1. The results are shown in Table 3.

Detailed Description Text (22):
Sealant compositions were prepared in the same manner as in Example 1 except that instead of the condensation product (b.sup.1) or (b.sup.2) used in Example 1, N-.beta. (aminoethyl).gamma.-aminopropyltrimethoxysilane,

.gamma.-glycidoxypropyltrimethoxysilane and .gamma.-methacryloxypropyltrimethoxysilane were respectively used. The sealant compositions were subjected to the adhesion and peeling tests in the same manner as in Example 1. The results are shown in Table 3.

Detailed Description Text (26):
Six sealant compositions were prepared in the same manner as in Example 1 except that instead of the condensation product (b.sup.1) or (b.sup.2) used in Example 1, condensation products (b.sup.11) to (b.sup.16) were respectively used. The sealant compositions were subjected to the adhesion and peeling tests as in Example 1. The results are shown in Table 5.

Detailed Description Text (31):

Two sealant compositions were prepared in the same manner as in Example 1 except that instead of the condensation product (b.sup.1) or (b.sup.2) used in Example 1, the condensation product (b.sup.17) or (b.sup.18) was used, respectively. The sealant compositions were subjected to the adhesion and peeling tests in the same manner as in Example 1. The results are shown in Table 6.

Detailed Description Text (34):

The representative sealant compositions prepared in Examples 1 to 4 were respectively coated on aluminum plate on a bead pattern having a thickness of 2 mm, a width of 10 mm and a length of 100 mm, and cured at 20 degree. C. under a relative humidity of 65% for and a length of 200 mm, and dutte a composition were subjected to irradiation of Jacob Then, the applied sealant compositions were subjected to irradiation of ultra-violet rays for 500 hours by means of a Sun Shine Weather Meter, whereupon the change of surface condition was observed. The results thereby obtained are shown in Table 7.

<u>Detailed Description Text</u> (36):
The representative sealant <u>compositions</u> prepared in Examples 1 to 4 and placed in sealed containers, were subjected to accelerated storage at 50.degree. C. for 30 days. Then, they were brought to 20.degree C., and their viscosities were measured by a Brook Field Type Rotary Viscometer. The test results are shown in Table 7.

ofs

YOUR BYWOT the daols (c2), have a molecular weight of from 60 to

O mon from 0 to 90 mol %, based on the total amount of ons 0002 of 002 of the diols (c2), have a molecular weight of from c2.1) from 10 to 100 mol %, based on the total amount cs) bolyols, of which

cl) polyfunctional isocyanates of 4 to 30 carbon atoms, and the polyurethane (PUR.Ic) being composed of emino groups,

ste steopojie pydroxyl groups or primary or secondary pave groups which are reactive toward isocyanate and differ from the polyols (b2) and monomers (b3) and 50 64) if required, further polyfunctional compounds which

dispersibility to the polyurethanes, bosentially hydrophilic group imparting waterthermore carry at least one hydrophilic group or one one group reactive toward isocyanate groups and fur- 45 (pg) sud page at least one tsocyanate group or at least b3) monomers which differ from the monomers (b1) and

10m/g 00c the diols (b) have a molecular weight of from 60 to 62.2) from 0 to 90 mol %, based on the total amount of 500 to 5000 and

of the diols (b2), have a molecular weight of from 12.2) from 10 to 100 mol %, based on the total amount ps) bolyols, of which

bl) polyfunctional isocyanates of 4 to 30 carbon atoms, 35 the polymethane (PUR.1b) being composed of

a polyurethane (PUR.1c) as compound (V1), s polyurethene (PUR.1b) and

the phase (P.1) is a mixture of

3. An squeous dispersion as claimed in claim I, wherein sumo Broups

sue sleedholic hydroxyl groups or primary or secondary which are reactive toward isocyanate groups and which differ from the monomers (a2) to (a4) and have groups 25 a5) if required, further polyfunctional compounds which scryloyl group and

which furthermore carry at least one acryloyl or methteast one group reactive toward isocyanate groups a4) monomers which differ from the monomers (a1), (a2)

dispersibility to the polyurethanes, potentially hydrophilic group, imparting waterthermore earry at least one hydrophilic group or one one group reactive toward isocyanate groups and fur. 15 (a2) and carry at least one isocyanate group or at least 83) monomers which differ from the monomers (81) and

YOU EVEDOT the diols (a2), have a molecular weight of from 60 to OT a2.2) from 0 to 90 mol %, based on the total amount of bas 0002 or 002

of the diols (a2), have a molecular weight of from a2.1) from 10 to 100 mol %, based on the total amount a2) polyols, of which

al) polyfunctional isocyanates of 4 to 30 carbon atoms,

the phase (PUR.1s) contains a polyurethane (PUR.1s) composed 2. An squeous dispersion as claimed in claim I, wherein

as claimed in claim L. comprising applying to said substrate an aqueous dispersion

10. A method of coating or adhesively bonding a substrate aqueous dispersion as claimed in claim I. which is adhesively bonded, impregnated or coated with an 9. An article of wood, metal, textile, leather or plastic

22 mercaptopropionate. the compound (V.II) is pentacrythrityl tetrakis-3-

8. An aqueous dispersion as claimed in claim 7, wherein sloopol and a C2-C10-thiomonocarboxylic scid.

an ester synthesized from a polyhydric C-C10-alkyl рогузапас ог an araliphatic Co-Coopolyamine or an auphatic Co-Coo-

at (II.V) brancomos sdi

7. An aqueous dispersion as claimed in claim 6, wherein weight of less than 10000. solubility of less than I g/l in water and a molecular

sumo Econbs ot secondary amino groups and has a from the group consisting of the thiol groups, primary a compound (V.II) which carries at least 2 groups selected smino groups or thiol groups per kg, and

than 0.05 mol of primary samme groups, secondary or the polymers (POL.Ilc) or (POL.Ild) carrying less or solution polymerization, the polywethane (PUR.Ile) C=C double bonds by the method of tree radical mass capable of free radical polymerization and having polymer, the polymer being prepared from monomers Stonbs which impart water dispersibility to the polymerization or a polymer (POL.IId) which carries by the method of free radical emulsion or suspension radical polymerization and having C=C double bonds mer (POL. IIc) prepared from monomers capable of free impart water dispersibility to the polyurethane, a polya polyurethane (PUR.Ile) which carries groups which

the phase (P.II) contains a mixture of 6. An squeous dispersion as claimed in claim 1, wherein

groups, secondary amino groups or thiol groups per kg. (POL.Ib) carrying from 0.05 to 3 mol of primary amino polyurethane (PUR.IId) and the polymers (POL.IIa) and method of free radical mass or solution polymerization, the and (a3) and carry at least one isocyanate group or at 20 polymerization and having C=C double bonds by the bolymer, prepared from monomers capable of free radical carries groups which impart water dispersibility to the or suspension polymerization or a polymer (POL.IId) which C=C double bonds by the method of free radical emulsion mets capable of free radical polymerization and having polyurethane, a polymer (POL.IIa) prepared from monocarries groups which impart water dispersibility to the the phase (P.H.) contains a polyurethane (PUR.Hd) which 5. An aqueous dispersion as claimed in claim 1, wherein scrylic acid or methacrylic acid with a bisepoxide.

a bydroxy-C₁-C₆-alkyl methacrylate or the bisadduct of the monomer (a4) or (c3) is a hydroxy-C1-C6-alkyl acrylate, 4. An aqueous dispersion as claimed in claim 3, wherein

[πιτρειποιε σειτη at least one acryloy] or methacryloy] jeszi oue group reschive toward isocyanate groups and and (c2) and have at least one isocyanate group or at c3) and monomers which differ from the monomers (c1)

CLATMS .

- 1. A one component room temperature curable sealant composition comprising:
- (A) a polyether polymer having at its terminal a hydrolyzable silicon functional group represented by the formula: ##SFRIS## wherein R.sup.I is a monovalent hydrocarbon group having from 1 to 12 carbon atoms, R.sup.II is a monovalent hydrocarbon group having from 1 to 6 carbon atoms, and n is an integer of 0 to 2;
- (B) a partial addition condensation product of:
- (a) an aminoalkylalkoxysilane represented by the formula: ##STR16## wherein R.sup.1 is a divalent hydrocarbon group having from 1 to 4 carbon atoms, each of R.sup.2 and R.sup.3 is a monovalent hydrocarbon group having from 1 to 4 carbon atoms, Z is a hydrogen atom or an aminoalkyl group, and a is an integer of 0 or 1, with
- (b) an epoxy compound containing at least one epoxy group in its molecular structure and having a molecular weight of from 100 to 1,000 and an epoxy equivalent of from 100 to 500, wherein 0.3-1.0 equivalents of epoxy are used per equivalent of aminoalkylalkoxysilane,
- (c) a compound selected from the group consisting of .gamma.-glycidoxypropylmethyldiethoxysilane, .gamma.-glycidoxypropylmethyldiethoxysilane, .gamma.-methacryloxypropyltrimethoxysilane, .gamma.-methacryloxypropyltrimethoxysilane, .gamma.-methacryloxypropylmethyldimethoxysilane,
- (d) an alkoxysilane selected from the group consisting of vinyltrimethoxysilane, vinyltrimethoxysilane, gamma-mercaptopropyltrimethoxysilane, gamma-hercaptopropyltrimethoxysilane, gamma-hercaptopropyltrimethoxysilane, vinyl tris (beta-methoxyethoxy) silane, dimethyldimethoxysilane, methyltrimethoxysilane, tetramethoxysilane, dimethyldimethoxysilane, methyltrimethoxysilane, tetramethoxysilane, diphenyldimethoxysilane, and phenyltrimethoxysilane.
- (e) an organic titanic acid ester; or a mixture thereof, and
- (C) a condensation catalyst of a silanol compound.
- 2. The <u>one component</u> room temperature curable sealant <u>composition</u> according to claim 1, which comprises 100 parts by weight of the polyether polymer (A), from 0.5 to 10 parts by weight of the partial addition condensation product (B) and from 0.05 to 5 parts by weight of the condensation catalyst (C).
- 3. The one component room temperature curable sealant composition according to claim 1, wherein the partial addition condensation product is a condensation product of one equivalent of the aminoalkylalkoxysilane (a) with from 0.3 to 1.0 equivalent of the epoxy compound (b), from 0.03 to 2.6 equivalent of the compound (c), from 0.03 to 2.6 equivalent of the dalkoxysilane (d), and from 0.1 to 1.2 equivalent of the organic titanic ester (e) or a mixture thereof.
- 4. The <u>one component</u> room temperature curable sealant <u>composition</u> according to claim 1, wherein the polyether polymer (A) has a principal chain comprising repeating units represented by the general formula --R--O-- where R is a divalent alkylene group having from 2 to 4 carbon atoms.
- 5. The one component room temperature curable sealant composition according to claim 1, wherein the polyether polymer (A) is a reaction product of a polyether urethane prepolymer having a terminal isocyanate group and gamma.-aminopropyltrimethoxysilane, or an oxypropylene polymer having a terminal silveteners are marked to the composition of a composition of the formula: #MSTRI7##
- 6. The one component room temperature curable sealant composition according to claim 1, wherein the aminoalkylalkoxysilane (a) is selected from the group consisting of aminomethyltriechoxysilane, N-.beta. (aminoethyl) methyltrimethoxysilane, aminomethyltrimethoxysilane, aminomethyltrimethoxysilane, beta. (aminoethyl) methyltributoxysilane, aminopropyltrimethoxysilane, gamma.-aminopropyltrithethoxysilane, gamma.-aminoisobutyltrimethoxysilane, N-.beta. (aminoethyl)
 N-.beta. (aminoethyl)

of 5

1 10	
11/8	
49 Claims, No Drawings	\$6 'Z6 '88 '08 '8L/\$Z\$
	8] Field of Search 525/57, 301, 63, 66,
plastic composition is remarkably improved.	106/522 :46/525
The compatibility of each component in the thermo-	525/66, 525/78, 525/80, 525/88, 525/92,
position has excellent mechanical and other properties.	Z U.S. Cl 525/87; 525/63;
having a polar group. This thermoplastic polymer com-	[] Juf. CL
trivalent metal ion and (ii) a thermoplastic polymer	
tited block copolymer with a univalent, bivalent of	Feb. 22, 1980 [JP] Japan
thereof, or the ionically crosslinked product of the mod-	Feb. 22, 1980 [JP] Japan 55-20568
modified with a dicarboxylic acid or the derivative	Feb. 16, 1980 [JP] Japan 55-17215
pound and a conjugated diene compound, which is	Feb. 16, 1980 [JP] Japan 55-17214
modified block copolymer of an aromatic vinyl com-	Peb. 16, 1980 [JP] Japan 55-17213
A thermoplastic polymer composition containing (i) a	Feb. 16, 1980 [JP] Japan 55-17212
[23] VHZLBVCL	Feb. 16, 1980 [JP] Japan 55-17210
рису	26457-42 1979 [19] Japan S4-73492
Primary Examiner—J. Ziegler Autorney, Agent, or Firm—Birch, Stewart, Kolasch & Birch	O Foreign Application Priority Data
Vol. 13, pp. 396-397.	2] Filed: Jun. 6, 1980
Encyclopedia of Polymer Science and Technology,	791,721 :: oV .lqqA [1
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3,845,163 10/1974 Murch	Kawasaki; Hideo Morita, Yokohama,
3,549,727 12/1970 Coates et al	5] Inventors: Akira Saito, Fujisawa; Akio Yamori,
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	COMPOSITION
[56] References Cited	*] LHERMODIVZLIC DOTAMEB
Agel , 15 .nst [45] Ago Goldeligue	aito et al. Beat
9/0,624,4 [11]	oniced States Fatent [19]

- .gamma.-aminopropylmethyldimethoxysilane, and $[\{N-.beta.(aminoethyl)\}N-.beta.(amonoethyl)]$.gamma.-aminopropyltrimethoxysilane.
- 7. The one component room temperature curable sealant composition according to claim 1, wherein the epoxy compound (b) is a bisphenol A type epoxy compound.
- 8. The one component room temperature curable sealant composition according to claim 1, wherein the organic itianic acid ester is selected from the group consisting of tetraisopropyl titanate tetra-n-butyl titanate, butyl titanate dimer and tetra (2-ethylhexyl) titanate.
- 9. The one component room temperature curable sealant composition according to claim 1, wherein the condensation catalyst (C) of a silanol empound is selected from the group consisting of an organic silicone titanate, stannous octoate dibutyl tin diacetate, dibutyl tin dilaurate and dibutylamine-2-ethylhexoate.

5 of 5

cislly those containing a polar group in which a polar pie with other thermoplastic polymer substances, espehydrocarbon monomers and since they are not compausince these block compolymers are composed of only 65 mer compositions having desired properties. However, styrene polymers and polyolefins, provide useful polyselves and, also when they are mixed with, for example, suq confinence queue combonique sue neelid by them-The block copolymerss of aromatic vinyl compounds 60

ple, packaging materials. clear high-impact styrene resin, in the field of, for exampolymers having a high styrene content are used, as a like. On the other hand, styrene-butadiene block coresins and the like, adhesives, bonding agents and the 55 to the various thermoplastic polymers containing polar materials (for shoes), the modification of polystyrene fields of, for example, molding materials, such as soling rene-butadiene block copolymers are widely used in the thermoplastic plastic materials. Therefore, these styability of processability similar to those of conventional 50 conventional vulcanized rubbers and also have moldrene content have rubber elasticity similar to that of polybutadiene blocks and having a relatively small stying two or more polystyrene blocks and one or more the styrene-butadiene block copolymers, those contain- 45 plastic polymer composition of the present invention substances which are recently noted in the art. Among putadiene block copolymers, are one of the polymer inflated diene compounds, typically including styrene-Copolymers of aromatic vinyl components and con-

patibilities. tion, based on the poor intermixing properties and comnon-uniformity or non-homogeneity and the delaminacannot be readily obtained due to, for example, the tion of certain polymer substances by these attempts good. As a result, in many cases, the desired modifica- 35 ent polymer substances to be mixed is not necessarily to brepare compositions, the compatibility of the differthe case where various polymeric substances are mixed or the laminating of two or more layers. However, in molecular-weight substances of morganic substances, ing of various polymer substances together with lowstances having different properties, the mixing or blendexample, the combination of two or more polymer sublower the cost of products have been made by, for balance of the physical properties of products or to 25 one said modified block copolymer with at least one improve the processability of products, to adjust the polymer substance. For this reason, various attempts to or properties cannot be obtained by the use of a single However, desired products having a desired property used as fibers, films, sheets, molded articles and the like. 20 prising:

Various polymer substances have heretofore been the thermoplastic polymer composition is remarkably broperties and the compatibility of each component in position has excellent properties including mechanical mers of polyolefins. This thermoplastic polymer comand halogen atoms and, optionally, (iii) styrene polytaining polar atoms, such as oxygen, nitrogen, sulfur (ii) a mermoplastic polymer having polar groups conthereof, or the ionically crosslinked product thereof and modified with a diearboxylic acid or the derivative bonuq suq s coulnisted queue compound, which is modified block copolymer of an aromatic vinyl coma thermoplastic polymer composition containing (i) a tic polymer composition. More specifically, it relates to The present invention relates to a novel thermoplas-

THERMOPLASTIC POLYMER COMPOSITION

plock copolymers or the ionically crosslinked dicarboxor the derivatives thereof contained in the modified reacted or interacted with the dicarboxylic acid groups group, epoxy group and isocyanate group, which can be ten polar groups such as an amino group, hydroxyl mers containing polar groups of the component B concopolymers. Especially, when the thermoplastic polyof the compositions containing the unmodified block components A and B are improved, compared to those thermoplastic polymer compositions containing the the mechanical and chemical properties of the present pared to the unmodified block copolymer. As a result, groups used as the component B is increased as, comnent A, the interaction of the component A with respect groups or the derivatives thereof are used as the compofled block copolymers containing dicarboxylic acid According to the present invention, since the modi-A bas A

barts by weight of the total amount of the components ing of styrene polymers and polyolefins, based on 100 of at least one member selected from the group consistmay optionally contain 0 through 100 parts by weight In addition to the components A and B, the thermo-

average molecular weight of 100 through 10,000. ylic acid or the derivative thereof and having a numberleast one polar group which is reactive to the dicarbox-40 above-mentioned polymers, said oligomers having at polymers, ionomers and oligomers other than the acrylates, polymethacrylates, chlorinated hydrocarbon amides, polyurethanes, vinylalcohol polymers, polyreming bojer. Bronds of the component B include poly-The above-mentioned thermoplastic polymers conmer having polar groups.

consisting essentially of at least one thermoplastic poly-(b) 99 through I parts by weight of a component B group or the derivative thereof is grafted; and

30 molecular unit containing at least one dicarboxylic acid conjugated diene compound onto which at least one least one aromatic vinyl compound and at least one plock copolymer comprising a block copolymer of at univalent, bivalent or trivalent metal ion, said modified mers and the ionically crosslinked products of at least from the group consisting of modified block copolyconsisting essentially of at least one member selected (a) I through 99 parts by weight of a component A

brovided a thermoplastic polymer composition com-In accordance with the present invention, there is Office objects and advantages of the present invention will be apparent from the following description.

15 proved. pact resistance and the heat resistance thereof, are imgroup is improved and the properties, such as the imthermoplastic polymer substance containing a polar which the compatibility of the block copolymer with a 10 compound and the conjugated diene compound, in

containing the block copolymer of the aromatic vinyl and to provide a thermoplastic polymer composition opviate the above-mentioned problems of the prior arts Accordingly, an object of the present invention is to 5 thermoplastic polymer substances.

copolymers are mixed with the above-mentioned other sired properties cannot be obtained when these block is contained, useful polymer compositions having deatom such as oxygen, nitrogen, sulfur or halogen atoms



Search Results - Record(s) 1 through 5 of 5 returned.

1. Document ID: US 6274693 B1

L2: Entry 1 of 5 File: USPT Aug 14.

Aug 14, 2001

US-PAT-NO: 6274693

DOCUMENT-IDENTIFIER: US 6274693 B1

TITLE: Method for producing a two-layer coating and suitable enamel therefor

DATE-ISSUED: August 14, 2001

INVENTOR-INFORMATION:

NAME CITY

TY STATE

ZIP CODE

COUNTRY

 Poth; Ulrich
 Munster
 DB

 Wiatr; Barbel
 Munster
 DB

US-CL-CURRENT: 528/45; 427/385.5, 427/407.1, 544/224, 560/158

Full Title Chation Front Review Classification Date Reterence Sequences Attachments

Draw Desc. Image

KWIC

2. Document ID: US 6060573 A

L2: Entry 2 of 5

File: USPT

May 9, 2000

US-PAT-NO: 6060573 DOCUMENT-IDENTIFIER: US 60605

US (606057) A

König

TITLE: Polyisocyanates blocked with CH-acidic esters and stabilized against thermal yellowing

DATE-ISSUED: May 9, 2000

INVENTOR - INFORMATION:

NAME CITY

- . .

Leverkusen

STATE ZIP CODE

COUNTRY

Konig; Eberhard Kobusch; Claus Kuttner; Wolfram

of 3

Meerbusch Bergisch Gladbach DE DE

US-CL-CURRENT: $\underline{528}/\underline{45}$; $\underline{252}/\underline{182.2}$, $\underline{524}/\underline{770}$, $\underline{524}/\underline{772}$, $\underline{528}/\underline{73}$, $\underline{560}/\underline{158}$, $\underline{560}/\underline{331}$

Full Title Citation Front Review Classification Date Reference Sequences Attachments Graw Description KWAC

3. Document ID: US 5039720 A

addition is greater than that of the primary or secondary smonut of the isocyanate groups present at the time of the secondary amino groups only in amounts such that the total It is advisable to use compounds having primary or

isocyanates, as monomers (a5). polyamine baving at least 2 amino groups reactive toward based on the total amount of component (a2) to (a4), of a from 1 to 10, particularly preferably from 4 to 8, mol %, The polyurethanes preferably contain no polyamine or пспунспепланные

ticularly preferably mixtures of isophoronediamine and Miximes of di- and triamines are preferably used, parshouqiug polyamines are liberated hydrolytically.

water or a part of the dispersing water so that the correwater and the mixture is then mixed with the dispersing are generally mixed with the prepolymers in the absence of prepolymers. When such blocked polyamines are used, they ste slso plock polysmines which may be used in the prepa-Oxazolidiņes, ash for example in U.S. Pat. No. 4,192,937, No. 4,269,748) or amine salts (cf. U.S. Pat. No. 4,292,226). example CA-1 129 128), ketazines (cf. for example U.S. Pat. example in the form of the corresponding kerimines (cf. for 45 monomers (al), (a2), (a2) and (a5). The amines may also be used in blocked form, for

4-aminomethyloctane. and tramines, such as diethylenetriamine and 1,8-diaminosminocthylethanolamine, hydrazine and hydrazine hydrate, diaminodicyclohexylmethane, 1,4-diaminocyclohexane, 40 trimethylcyclohexane (isophoronediamine, IPDA), 4,4'dimethylpiperazine, amino-3-aminomethyl-3,5,5diaminobutanes, diaminohexanes, piperazine, 2,5diamines are diaminocthane, diaminopropanes, primary and one secondary amno group. Examples of these 35 primary amino groups, two secondary amino groups or one preferably from 60 to 300, g/mol, which contain at least two tional amines having a molecular weight of from 32 to 500, Amines suitable for this purpose are in general polytune-

ing a plurality of amino groups reactive toward isocyanates. 30 chain extension or crosslinking by adding compounds havprepared, rapidly dispersed in water and then subjected to such cases, the prepolymer having isocyanate groups is urchanes having a high molecular weight are desired. In agueous dispersions of crosslinked polyurchanes or poly- 25 water with isocyanates. This is often necessary when since amines generally react more rapidly than alcohols or or crosslinking is to be earned out in the presence of water, smino groups are used particularly when the chain extension Polyamines having 2 or more primary and/or secondary 20

amino groups, eg. monocibanolamine, are also suitable. monosiconols having one or more primary and/or secondary carry a further group reactive toward isocyanates, such as Monosleohols which, in addition to the hydroxyl group, erol and sugar.

or crosslinking are, for example, trimethylolpropane, glycmay be used for establishing a certain degree of branching Alcohols which have a functionality of more than 2 and pydroxyl groups.

ondary amino groups in addition to one or more alcoholic 10 combonuds which carry one or more primary and/or sec-2 or more primary and/or secondary amino groups and tribydric or polybydric nonaromatic alcohols, amines having for crosslinking or chain extension. They are in general and differ from the monomers (a2) to (a4) are used in general 5 The monomers (a5) which may be used as components

combosition as the polyesters which are suitable as monoand fumaric acid. Otherwise, these polyesters have the same

jent smonnt of an epoxide compound. the carboxyl groups of this ester by reaction with an equiva-65 to give a carboxyl-containing polyester, and then esterifying acrylic and/or methacrylic acid,

sciq' suq

dibasic to tetrabasic C3-C3e-carboxylic acids, cg. adipic being, if required, ethoxylated or propoxylated, numerally lopropane and pentaerythritol, these alcohols low molecular weight higher alcohols, such as glycerol, polyols as described as monomers (a2.1) and (a2.2), and These are preferably esters obtainable by reacting

EP-A-447 845, 279 303 or 127 766. (V.I), acryloyl- or methacryloyl-containing esters disclosed

The disperse phase (P.I) may also contain, as compounds ph s queetly bonded estbony group.

C-C double bond and in which the double bond is activated thane (PUR.Ic), from 0.2 to 4 mol of groups which have a ration of the novel polyurethanes for chain extension of the so that the polyurethane (PUR.le) contains, per kg of polyure-The monomers (c3) are preferably used in amounts such (4s) bns (2.2s), (1.2s), (1s) sramonom

(c3) are the corresponding monomers which are preferred as Particularly suitable monomers (c1), (c2.1), (c2.2) and ste the corresponding monomers which are preferred as Particularly suitable monomers (b1), (b2), (b3) and (b4)

In general from 0.5:1 to 10:1. Inc ratio of the polyurethane (PUR.Ib) to compound (V.I) is centa et jeszi one scrajoaj or methecrajoaj group.

group reactive toward isocyanate groups and furthermore and have at least one isocyanate group or at least one c3) monomers which differ from the monomers (c1) and (c2) g/mol,, and

diols (c2), have a molecular weight of from 60 to 500 c2.2) from 0 to 90 mol %, based on the total amount of the bas 0008

the diols (c2), have a molecular weight of from 500 to of imom 10 to 100 mol %, based on the total amount of cs) polyols, of which

cl) polyfunctional isocyanates of 4 to 30 carbon atoms, and the polyurethane (PUR.1c) being composed of

speopojie paquoxaj fitonbe ot brimara ot secondary amino groups which are reactive toward isocyanate and are differ from the polyols (b2) and monomers (b3) and have b4) if required, further polytunctional compounds which polyurethanes,

hydrophilic group, imparting water-dispersibility to the csul st jesst one paquobpijic Eronb ot one bojentisliy group reactive toward isocyanate groups and furthermore (b2) and have at least one isocyanate group or at least one b3) monomers which differ from the monomers (b1) and

the diols (b), have a molecular weight of from 60 to 500 b2.2) from 0 to 90 mol %, based on the total amount of bas 0008 the diols (b2), have a molecular weight of from 500 to

b2.1) from 10 to 100 mol %, based on the total amount of ps) bolyols, of which b1) polyfunctional isocyanates of 4 to 30 carbon atoms,

lo besoqmos gaisd (dl. AU4) santismyloq str a polyurethane (PUR.1c) as compound (V.I), s polyurchane (PUR.Ib) and

or consists of a mixture of in another preferred embodiment, the phase (P.I) contains

Dut with the actyloyl or methactyloyl groups. groups do not react with the isocyanate groups to give urea the situation where a relatively large proportion of the amino amino groups. Under these conditions, it is possible to avoid L2: Entry 3 of 5 File: USPT Aug 13, 1991

US-PAT-NO: 5039720

DOCUMENT-IDENTIFIER: US 5039720 A

TITLE: Aqueous electrophoretic enamel coating materials, which can be deposited at the cathode crosslinked with methane tricarboxylic acid amides of malonic acid derivatives

DATE-ISSUED: August 13, 1991

INVENTOR-INFORMATION:

NAME CITY Saatweber: Dietrich

STATE ZIP CODE COUNTRY Wuppertal DE

Hendriux; Georg Wuppertal DE Brindopke; Gerhard Sulzbach/Ts DE Plum: Helmut Taunusstein DE

Full Title Citation Front Review Classification Date Reference Sequences Attachments Draw Desc | Image

4. Document ID: JP 07207223 A

L2: Entry 4 of 5

File: JPAB

Aug 8, 1995

PUB-NO: JP407207223A DOCUMENT-IDENTIFIER: JP 07207223 A TITLE: THERMOSETTING COATING COMPOSITION

PUBN-DATE: August 8, 1995

INVENTOR - INFORMATION: NAME

COUNTRY

MORIYA, YOICHI MARUYAMA, CHIKASHI SHIBAFUJI, KISHIO PEETAA, BETSUTSU

INT-CL (IPC): C09 D 175/04; C09 D 161/32; C08 F 290/06; C08 G 18/62

Full Title Citation Front Review Classification Date Reference Sequences Attachments Draw. Deso | Clip Img | Image

KWC

5. Document ID: DE 2342603 A BE 819042 A DE 2342603 B DK 7404494 A FR

2241573 A GB 1442024 A IT 1018973 B NL 7411118 A SE 7410681 A L2: Entry 5 of 5

DERWENT-ACC-NO: 1975-17772W

Mar 6, 1975

DERWENT-WEEK: 197511

2 of 3

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TITLE: Lacquer soluble isocyanate-contg. addtn. prods. - of malonic acid dialkyl esters

File: DWPI

to 1.5. The prepolymer is first dispersed in water and then, definition is greater than from 1.0 to 3, preferably from 1.05 (bd) are chosen so that the ratio A.B according to the 65 reacted completely. The components (a1) to (a5) or (b1) to a (potentially) water-dispersible polyurethane which has which carries isocyanate groups is first prepared instead of accione process in that a water-dispersible prepolymer The "prepolymer mixing process" differs from the 60

to form a dispersion in which water is the continuous phase. atmospheric pressure. Water is added in an amount sufficient in a water-miscible solvent which boils below 100° C. at is prepared from the components (a1) to (a5) or (b1) to (b4) In the "accione process", a water-dispersible polyurethane tollowing processes:

In general, the dispersions (DJ) are prepared by one of the

(L6L ESE known (cf. EP-A-443 537, 183 119, 181 486, 189 945 and which carry acryloyl or methacryloyl groups are generally so removed from the dispersion, for example by distillation bond is activated by a directly bonded carbonyl group and which has a C-C double bond and in which the double Dispersions (D.I) which contain a polyurcthane (PUR.1a)

the other. The dispersions should have a charge of the same as example polymers, for example hydrophobic systems, such be carried out, for example, by stirring one dispersion into The mixing of the two dispersions is not critical and can

taining disperse phase (P.II) but not disperse phase (P.I). groups (disperse phase PII), with a dispersion (D.II) conconsisting of the thiol, primary amino and secondary amino 40 persing results in a disperse phase in which the polyurchane dispersed form which carry 2 groups selected from the group (U.1), however, being free of water-insoluble compounds in bonded carbonyl group (disperse phase P.I), this dispersion bond and in which the double bond is activated by a directly by mixing a dispersion (D.I), containing, in disperse form, a polyurethane having groups which have a C—C double 35 The novel dispersions can be prepared in a simple manner directly bonded therewith.

in which the double bond is activated by a carbonyl group 0.2 to 1, mol of groups which have a C-C double bond and 30 thane (PUR.1s), from 0.05 to 3, particularly preferably from that the polyurethane (PUR.Ia) contains, per kg of polyure-The monomers (a4) are preferably used in amounts such

the ratio A:B is as close as possible to 1:1. is from 0.5:1 to 2:1, preferably from 0.8:1 to 1.5, particularly reacting with isocyanates in an addition reaction,

sud the moler amount of functional groups capable of B) is the sum of the moist amount of the hydroxyl groups A) is the molar amount of isocyanate groups and A:B, where

their respective molar amounts are chosen so that the ratio Usually, the components (a1) to (a5) or (b1) to (b4) and coemisity.

bet molecule is generally known in the area of polyurethane 15 stithmetic mean of the number of reactive functional groups the monomers which are reactive with one another and the urethanes can be adjusted by the choice of the amounts of The manner in which the molecular weight of the polypreferably less than I, gA (measured at 20° C.).

pound (VI) have a solubility in water of less than 5, Preferably, both the polyurethane (PUR.18) and the comdirectly bonded therewith.

which the double bond is activated by a carbonyl group (PUR.18) is usually earned out and earry, per 1000 g, from 0.1 to 1 mol groups which have a C—C double bond and in solvent in which the preparation of the polyurethanes have a solubility of at least 5% by weight at 20° C. in a Particularly suitable compounds (VI) are those which

acetone process directly in an aqueous dispersion (D.II). polyurethane (PUR.1b) and compound (V.I) in the case of the process and the polyurethane (PUR.1a) or the mixiure of the compound (V.I) in the ease of the prepolymer mixing the mixture of the prepolymer of polyurethane (PUR.Ib) and by dispersing the prepolymer of polyurethane (PUR.18) or (D.I) and (D.II), the novel dispersions may also be prepared In addition to being prepared by mixing the dispersions

a shear rate of 250 s-1). a viscosity of from 10 to 500 mPa.s (measured at 20° C. and from 10 to 75, preferably from 20 to 65, % by weight and The dispersions (D.I) generally have a solids content of

55 disperse phase (P.I). These hydrophobic assistants may also be present in the

larly preferably free of solvents. solvent content of less than 10% by weight and are particuunder reduced pressure. The dispersions preferably have a polyurethane, the major part of the solvent is usually If a solvent was present in the preparation of the

phenol or phenol derivatives or epoxy resins. as phenol condensation resins obtained from aldehydes and DE-V-3 603 238' 4 306 019 and 4 0 24 267, using as an This method of codispersing is described, for example, in both together in one particle.

(PUR.Ib) and the compound (VI) are present side by side, ie. dispersing these mixtures in water. This method of codisbicholymer mixing process with the compound (VI) and the acctone process and the corresponding prepolymer in the polyurethane (PUR.Ib) which has not yet been dispersed in pese phase (PI), are advantageously prepared by mixing the polyurethane (PUR.Ib) and the compound (VI) as the dis-The dispersions (D.I), which contain a mixture of the pressure and react only slowly with the monomers, if at all. a boiling point of from 40° to 100° C. at atmospheric Preferred solvents are infinitely miscible with water, have are ensured by the presence of solvents.

particularly when a low viscosity and good removal of heat Suitable polymerization apparatuses are stirred kettles, in order to accelerate the reaction of the diisocyanates.

preferably from 0.9:1 to 1.2:1. Very particularly preferably, 25 tin(II) octosic or diazabicyclo(2,2,2) octane, may be present The conventional catalysts, such as dibutyltin dilaurate,

of the monomers, is known in polyurethane chemistry. temperature, concentration of the monomers and reactivity influenced by a large number of parameters, such as 20 a few hours. The manner in which the reaction time 15 The required reaction times may be from a few minutes to stmospheric or autogenous pressure.

20° to 180° C., preferably from 50° to 150° C., under (b4) is carried out in general at reaction temperatures of from The polyaddition of the components (a1) to (cs) or (b1) to of NCO groups per kg of prepolymer. The imital weight of the NCO groups is 42 g per mol.

dispersed, the prepolymer contains less than 0.1% by weight reaction time are preferably chosen so that, before it is 10 (b4), the stoichiometric ratio of the starting materials and the In the case of the prepolymer of the monomers (b1) to socyanate groups of the prepolymers with chain extension. hydrolyzed to amino groups, which react with remaining no smine is added. In this case, isocyanate groups are toward isocyanates. Chain extension also takes place when tion with smines which carry 2 amino groups reactive toward isocyanates, or subjected to a chain extension reacwith amines which earry more than 2 amino groups active if required, crosslinked by reaction of the isocyanate groups

and aliphatic biuret polyisocyanates

PRIORITY-DATA: 1973DE-2342603 (August 23, 1973)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 2342603 A	March 6, 1975		000	
BE 819042 A	February 21, 1975		000	
DE 2342603 B	October 16, 1980		000	
DK 7404494 A	April 28, 1975		000	
FR 2241573 A	April 25, 1975		000	
GB 1442024 A	July 7, 1976		000	
IT 1018973 B	October 20, 1977		000	
NL 7411118 A	February 25, 1975		000	
SE 7410681 A	March 24, 1975		000	

INT-CL (IPC): C07C 119/04; C07C 127/24; C08F 0/00; C08G 18/72; C09D 3/72

Full Title Citation Front Review Classification Date Reference Sequences Attachments Craim Date Impas

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Term Documents POLYISOCYANATE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. 52877 POLYISOCYANATES.DWPI, TDBD, EPAB, JPAB, USPT, PGPB. 22356 MALONIC.DWPI,TDBD,EPAB,JPAB,USPT,PGPB 27243 MALONICS ESTER DWPI, TDBD, EPAB, JPAB, USPT, PGPB 475265 ESTERS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB. 300462 ((MALONIC NEAR3 POLYISOCYANATE) ADJ 5 ESTER). USPT, PGPB, JPAB, EPAB, DWPLTDBD. (POLYISOCYANATE NEAR3 MALONIC 5 ESTER). USPT, PGPB, JPAB, EPAB, DWPI, TDBD.

Display Format: - Change Format

Previous Page Next Page

3 of 3

amines which are mentioned as monomers (a5). to (#3): Smitsple monomers (44) sie the bolyfunctional sponding monomers which are preferred as monomers (a1) 65 radical polymerization and having C=C double bonds, a Particularly suitable monomers (d1) to (d3) are the correamino groups, secondary amino groups or thiol groups. (d3) and have a plurality of groups which are primary d4) compounds which differ from the monomers (d2) and

polyurethanes, and hydrophilic group, imparting water dispersibility to the csul at least one hydrophilic group or one potentially group reactive toward isocyanate groups and in addition (d2) and have at least one isocyanate group or at least one 'tom/g uu

the diols (d2), have a molecular weight of from 60 to d2.2) from 0 to 90 mol %, based on the total amount of

d2.1) from 10 to 100 mol %, based on the total amount of d2) polyols of which d1) polyfunctional isocyanates of 4 to 30 carbon atoms,

(PUR.IId) which is composed of contains, as the disperse phase (P.II), a polyurchane 45 stated in EP-A-341 886. A preferably used dispersion (D.II) is a dispersion which

sions (D.I) are generally known. aqueous dispersions as a result of being mixed with disperand are free of disperse phases (P.I) and give the novel Dispersions (D.II) which contain these disperse phases (P.II)

ices than 10000. solubility of 1 g/l in water and a molecular weight of summo groups and secondary smino groups and has a trom the group consisting of the thiol groups, primary

smino groups or thiol groups per kg, and than 0.05 mmol of primary amino groups, secondary or the polymer (POL.IIc) or (POL.IId) carrying less or solution polymerization, the polyurethane (PUR.11a) ComC double bonds by the method of free radical mass capable of free radical polymerization and having polymer, the polymer being prepared from monomers Stonbe which impart water dispersibility to the polymerization or a polymer (POL.11d) which carries radical polymenzation and having C=C double bonds mer (POL.IIc) prepared from monomers capable of free impart water dispersibility to the polyurethane, a polya polyurethane (PUR.IIe) which carries groups which

(P.II) contains or consists of a mixture of In an embodiment which is likewise preferred, the phase 50° C.).

particularly preferably less than I, g/l in water (measured at mer (POL.IIa) (POL.IIb) have a solubility of less than 5, Preferably both the polyurethane (PUR.1d) and the polyor thiol groups.

mmol/kg of primary amino groups, secondary amino groups (POL. IIa) or (POL. IIb) preferably carries from 50 to 1000 polymerization. The polyurethane (PUR. Ila) or the polymer double bonds by the method of free radical mass of solution Capable of free radical polymerization and having C==C polymer, said polymer being prepared from polymers certics Broups which impart water dispersibility to the or suspension polymerization, or a polymer (POL.IId) which C=C double bonds by the method of free radical emulsion polyurchane, a polymer (POL.lla) prepared from mono-mers capable of free radical polymerization and having groups which impart water dispersibility to the earbly consists of a polyurchane (PUR.IId) which carries The phase (P.II) preferably contains or particularly pref-

part of these monomers carrying hydrophilic groups, eg. carboxyl groups. The compound (VII) is added after the end menzation method, conventional monomers espable of free opisinsble by polymerizing, by the mass or solution poly-These are in general secondary dispersions which are the method of free radical mass or solution polymerization. 60 radical polymerization and having C=C double bonds by polymer (POL.11d) prepared from monomers capable of tree phase (II) contains or preferably consists of a mixture of a Suitable dispersions (D.II) are those in which the disperse thereof and the compound (V.II) is dispersed in water.

d3) monomers which differ from the monomers (d1) and 52 mixture of the polymethane (PUR.He) or the prepolymer (VUR.Ib) and compound (V.I) as the disperse phase, ie. a sions (D.I) which contain a mixture of polyurethane dispersions is similar to that for the preparation of dispercompound (V.II). The process for the preparation of these the diols (d2), have a molecular weight of from 500 to so the same composition as the polyurethane (PUR.Ib) and a polyurethane (PUR.He) which particularly preferably has phase (II) contains or preferably consists of a mixture of a perston (D.II) used is a dispersion in which the disperse In an embodiment which is likewise preferred, the dis-

these dispersions can be reacted with ethyleneimine, as supseduent functionalization with primary amino groups, solution polymerization and are then dispersed in water. For methacrylic acid by the method of free radical mass or 40 C=C double bonds in the presence of acrylic acid and/or mers capable of free radical polymerization and having These dispersions are prepared from conventional monowater dispersibility to the polymer, eg. carboxyl groups. containing (POL.IId) which carries groups which impart a compound (VII) which carries at least 2 groups selected 35 (POL.IIb) as the disperse phase are secondary dispersions Other suitable dispersions (D.II) which contain a polymer groups or thiol groups.

(POL.11s) having primary amino groups, secondary amino 5,227,463, are used for functionalizing the polymers 30 thiols suitable as regulators, as disclosed in U.S. Pat. No. of tree radical polymerization (for example TMXDI) or adneous medium. Isocyanates having double bonds capable the method of suspension or emulsion polymerization in an capable of tree radical polymerization are polymerized by by the method of free radical emulsion or suspension as which can be obtained when conventional monomers (FOLLIE) as the disperse phase are primary dispersions Suitable dispersions (D.U) which contain a polymer

Water at 20° C water solubility of less than 5, particularly less than 1, g/l in These water-insoluble compounds preferably have a

.ETO 248 psaying thiol groups are disclosed, for example in DE-A-2 Dispersions (D.II) containing polyurethanes (PUR.IId) 310 and EP-A-442 654.

disclosed in DE-A-2 734 576, DE-A-2 753 942, EP-A-390 which carries primary and/or secondary amino groups are Furthermore, dispersions which contain a polyurethane in the prepolymer is from 0.9:1 to 1.1:1.

the molar ratio of monomer (d4) to the NCO groups present 10 The amount of monomer (44) is preferably chosen so that water and the monomer (44) is then added to the dispersion. ized in the usual manner, the prepolymer is dispersed in tageously used, ic. the monomers (d1) to (d3) are polymerfunctional groups, the prepolymer mixing process is advans as the polyurethane (PUR.11d), one having amino groups as In the preparation of the dispersion (D. II) which contains, СН²ОН—СНОН—СН²ЗН

hols containing thiol groups, eg. CH2SH-CH2OH or Other suitable monomers (d4) are aminoacids and alco-

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Search Results - Record(s) 1 through 4 of 4 returned.

Document ID: US 6040009 A

L5: Entry 1 of 4

File: USPT

Mar 21, 2000

US-PAT-NO: 6040009

DOCUMENT-IDENTIFIER: US 6040009 A

TITLE: Low solvent content type-resin composition, coating composition containing such resin composition and process for coating such coating composition

DATE-ISSUED: March 21, 2000

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Marutani: Yoshiaki Hiroshima JP Tomita; Takashi Hiroshima JP Nakahama; Tadamitsu Hiroshima JP Uemura: Hirovuki Hiroshima JP Koga; Kazuhi Hiroshima JΡ Ohsawa; Mika Hiroshima JP

US-CL-CURRENT: 427/241; 427/240, 427/385.5, 427/388.2, 427/388.3, 523/400, 524/597, 525/430, 525/450, 525/450, 525/519, 526/297, 526/354, 526/80,

Full Titlle Citation Front Review Classification Date Reference Sequences Attachments Claims KMC |
Draw Desc Image

2. Document ID: US 5393823 A

L5: Entry 2 of 4

File: USPT

Feb 28, 1995

US-PAT-NO: 5393823 DOCUMENT-IDENTIFIER: US 5393823 A

TITLE: Coating resin composition

DATE-ISSUED: February 28, 1995

INVENTOR - INFORMATION :

NAME CITY STATE ZIP CODE COUNTRY Konno; Hidetoshi Izumi-ohtsu JP Ooka; Masataka Nara JP Takeda; Hirofumi Yao JP Sakamoto; Hiroshi Ikaruga JP

30

09

age in dimethylformamide. after several weeks' storage. A film prepared from the coating of leather. No free hydrazine is detectable even dispersion. The resulting dispersion may be used for the and 2.75 parts of chromium sulfate are stirred into the

I. An aqueous dispersion of a copolymer of olefini-

12 sjqephqe cally unsaturated monomers containing keto and/or



bis-semi-carbasides of the general formula aliphatic dicarboxylic acids of 2 to 10 carbon atoms and derivative from the group consisting of dihydrazides of polymer from 0.02 to 1 mole of an organic hydrazine agent for the keto and/or aldehyde groups of the co-20 groups, which dispersion contains as a crosslinking

2. The dispersion of claim 1 which contains from from 0.0002 to 0.02 mole of heavy metal ions per mole or a carbocyclic radical of 6 to 8 carbon atoms, and in which R is an aliphatic radical of 2 to 7 carbon atoms

drazide of an aliphatic dicarboxylic acid of 2 to 10 cardium, zinc, lead and/or cobalt ions per mole of a dihy-0.0002 to 0.02 mole of copper, iron, manganese, vanaof the hydrazine derivative,

up 540% of solvent after 1 day's storage in dimethylis detectable. A film prepared from the dispersion picks 10 dispersion picks up 620% of solvent after 1 day's storweeks' storage at room temperature, no free hydrazine may be used for coating paper. Even after several chromium sulfate are then stirred in. The dispersion 47 parts of toluylene-bis-semicarbazide and 0.28 part of 5 polymerization, the pH is brought to 7 with ammonia. tion in 5,000 parts of water. After completion of the of a 40% strength aqueous sodium lauryl-sulfate solu-

1,000 parts of vinyl acetate, 400 parts of polyvinyl EXAMPLE 15

of 15%. 250 parts of bis-semicarbaside of the formula Analysis shows a content of polymerized ethylene units the pressure is let down and the dispersion is run off. tinued for I hour at 55° C. The reactor is then cooled, completion of the addition, the polymerization is conduced into the autoclave continuously over 3 hours. On acctate and 500 parts of actyloxypivalaldehyde is introhours. In addition, a mixture of 7,000 parts of vinyl water. These two solutions are run in separately over 4 to strag 000,2 ni stillusid muibos to strag 04 to noitulos a parts of potassium persulfate in 2,000 parts of water and polymerization is started by means of a solution of 40 maintained during the subsequent polymerization. The forced in up to a pressure of 40 bar. This pressure is trol. The charge is then heated to 55° C. and ethylene is autoclave equipped with a stirrer and thermostatic conacetate and 6,500 parts of water are introduced into an ated with 20 moles of ethylene oxide, 20 parts of sodium solution: 25 mPa.s), 200 parts of nonylphenol oxyethylsicohol (88% hydrolyzed; viscosity of the 40% strength

Full Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Image |

3. Document ID: US 4972027 A

L5: Entry 3 of 4 File: USPT Nov 20, 1990

US-PAT-NO: 4972027

DOCUMENT-IDENTIFIER: US 4972027 A

TITLE: Composition curable at low temperature

DATE-ISSUED: November 20, 1990

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Isozaki: Osamu Yokohama JΡ Nakai; Noboru Hiratsuka JP Sugiura; Shinji Fujisawa JP Ito; Satoru Kanagawa JP Takami; Seiji Hiratsuka JP

US-CL-CURRENT: 525/365; 525/286, 525/288, 525/364, 525/72, 525/74

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments |
Draw Desc | Image |

KWIC

4. Document ID: US 4923945 A

L5: Entry 4 of 4 File: USPT May 8, 1990

US-PAT-NO: 4923945

DOCUMENT-IDENTIFIER: US 4923945 A

TITLE: Resin composition curable at low temperature

DATE-ISSUED: May 8, 1990

INVENTOR - INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Isozaki: Osamu Yokohama JP Nakai; Noboru Hiratsuka JP Ito: Satoru Kanagawa JP Takami; Seiji Hiratsuka JP

Full Title Citation Front Review Classification Date Reference Sequences Attachments

Draw Desc Image

KMAC

2 of 3

V096916500S0

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United States Patent [19]

Lum et al.

CURING COATING COMPOSITION [24] WATER-BASED, STORAGE STABLE, SELF-

*1nn. 29, 1999 [45] Date of Patent:

[11] Patent Number:

	. neqst	3/1660	2-91170
	. negel	4/1685	05019-72
	Germany .	9861/9	3440535
	European Pat. Off	0661/1	0350040
	PATENT DOCUMENTS	KEICN	EO
253/410	Lum et al	\$661/8	256,654,8
254/421	Vijayendran et al	15/1992	975,571,2
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254/423	Goos et al	2661/8	196'LEI'S
458/463	Hartog et alHartog	I66I/b	5,006,413
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254/425	Coogan et al	0661/9	978,756,4
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523/414		\$86 I/\$	4*445,248
254/558	Powell et al	£861/8	867,396,4
523/414	Powell et al		

Primary Examiner-James J. Sendleck

McDonald; Heidi A. Boehlefeld Autorney, Agent, or Firm-Vivien Y. Tsang; Robert E. Assistant Examiner-U. K. Rajguru

ABSTRACT

ent conditions. water-soluble catalyst to promote rapid curing under ambivinyl polymer, an ammonia-neutralized polyurcibane and a critical components of the composition are a self-curing It can be a clear coating or a staining composition. The highly dutable coating on various subsitates, such as wood. A coating composition has storage stability, and provides a

26 Claims, No Drawings

3,862,074 1/1975 Hickey 260/29.6 2,60,6591 1/1978 Scrives et al. 260/29.2 U.S. PATENT DOCUMENTS [95] References Cited LIS '8+5/+75 254/217 [51] Int. Cl. Cost 3/03; C24/501; S24/501; S24/501; S24/504; Cl. Cost 75/00 C081 3/03: C08F J2/00 [63] Continuation of application No. 08/660,717, Jun. 10, 1996, abandoned, which is a continuation of application No. 08/171,577, Dec. 21, 1993, abandoned. Related U.S. Application Data Oct. 22, 1997 [55] Filed: [12] Appl. No.: 08/955,418 [*] Notice: This patent is subject to a terminal dis-Cleveland, Ohio [73] Assignce: The Sherwin-Williams Company, Patel, Aliso Viejo, Calif. [75] Inventors: Dorey Lum, Suffern, N.Y.; Prashant



Set Name Query side by side		Hit Count Set Name result set	
DB=U	ISPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
<u>L14</u>	polyisocyanate and tetra-n-butyl titanate and polyester and one component and composit\$5	10	<u>L14</u>
<u>L13</u>	polyisocyanate and tetra-n-butyl titanate and polyester and one component composit\$5	0	<u>L13</u>
<u>L12</u>	polyisocyanate and tetra-n-butyl titanate and polyester and composit\$5	53	<u>L12</u>
<u>L11</u>	polyisocyanate and tetra-n-butyl titanate and polyester and stoving composit\$5	0	<u>L11</u>
<u>L10</u>	polyisocyanate and tetra-n-butyl titanate and polyester	56	<u>L10</u>
<u>L9</u>	polyisocyanate and tetra-n-butyl titanate polyester	0	<u>L9</u>
<u>L8</u>	polyisocyanate and tetra-n-butyl titanate	61	<u>L8</u>
<u>L7</u>	polyisocyanate near15 malonic ester and tetra-n-butyl titanate	0	<u>L7</u>
<u>L6</u>	polyisocyanate near15 malonic ester	18	<u>L6</u>
<u>L5</u>	polyisocyanate near1 5 malonic ester	0	<u>L5</u>
<u>L4</u>	polyisocyanate near15 malonic ester	18	<u>L4</u>
<u>L3</u>	polyisocyanate near5 malonic ester	10	<u>L3</u>
<u>L2</u>	polyisocyanate near3 malonic ester	5	<u>L2</u>
<u>L1</u>	polyisocyanate near malonic ester	3	L1

END OF SEARCH HISTORY

the grafted molecular units derived from the dicarboxgrafted to the block copolymer. When the amount of on 100 parts by weight of the base block copolymer, are weight, preferably 0.1 through 10 parts by weight, of copolymers and also such that 0.05 through 20 parts by an average, are grafted to each molecule of the block more dicarboxylic acids, or the derivatives thereof, on the block copolymer in an amount such that one or 60 amounts of the dicarboxylic acid groups, or the derivascids, or the derivatives thereot, should be gratted to active unsaturated positions thereof. These dicarboxylic gated diene portions of the block copolymers at the thereof, are addition reacted or grafted to the conjupolymers. The dicarboxylic acids, or the derivatives 55 tives thereof, to the above-mentioned base block cotion of unsaturated dicarboxylic acids, or the derivabresent invention can be prepared by the addition reac-

The modified block copolymers according to the dently, integers of 1 or more and m is an integer of 2 or two or more functional groups, n and p are, indepennsj Stonb ot a polyfunctional coupling agent having containing the conjugated diene compound, X is a residwherein A is a polymer block mainly containing the

x^u[<u>v</u> ⁴(g—<u>v</u>)]

rollow.

plock copolymers used in the present invention are as Typical examples of the various structures of the

within the range of the above-mentioned limitations. the molecular structure of the block copolymers are cesses can be used in the present invention, so long as combonuqs quincq from any other production prothe aromatic vinyl compounds and the conjugated diene ever, it should be noted that the block copolymers of duce branched or radial type block copolymers. Howtetrachloride, silicon tetrachloride and the like, to prowith polyfunctional coupling agents, such as carbon from the above-mentioned methods, can be reacted mers having active lithium terminal groups, obtained thylether and the like in addition, the block copolyby the addition of a small amount of polar compounds, giene portion of the block copolymer can be changed Furthermore, the micro structure of the conjugated order or by using a polyfunctional lithium compound. obtained by changing the monomer addition method or block copolymers having various structures can be butyl lithium. In the anionic copolymerization, the tion catalyst, an organic lithium compound, such as toluenc and the like, in the presence of, as a polymerizapou solvent, such as hexane, cyclohexane, benzene, 5 gated diene compounds in an inert inactive hydrocartion of the aromatic vinyl compounds and the conjuare generally prepared from the anionic copolymeriza-The block copolymers used in the present invention

components in the metallic compounds (i.e. the crossmodified block copolymers, the molar ratio of the metal order to effectively obtain the ionically crosslinked the diearboxylic acids, or the derivatives thereof, based 65 bly used to obtain the desired ionization amount. In cess amonut of the crosslinking agents may be preferaproceeds substantially quantitatively. However, an exmers are theoretically ionized. The ionization reaction tives thereof, contained in the modified block copolypounds is determined so that the partial or the total The addition amount of the crosslinking agent comtrophotometer.

determined by the use of, for example, an infrared speclinking agent compounds. The ionization amount can be can be controlled by the addition amount of the crossthe diearboxylic acid groups, or the derivatives thereof, agent compounds. The ionization degree or amount of thereof, are ionized by the addition of the crosslinking 20 mers, the dicarboxylic acid groups, or the derivatives In the ionically crosslinked modified block copolytribalent metal ion can be used as a crosslinking agent. compound containing at least one univalent, bivalent or copolymers via ionic bondings with at least one metallic aromatic vinyl compound, B is a polymer block mainly 45 mers are obtained by crosslinking the modified block These ionically crosslinked modified block copolycompositions.

the component B of the present thermoplastic polymer polymers especially improve the impact resistance of 40 tions. These ionically crosslinked modified block conent A of the present thermoplastic polymer composipivalent or trivalent metal ion can be used as the compomodified block copolymers with at least one univalent, Purther, the ionically crosslinked products of the 35 system by using a free-radical inhibitor.

substantial amount of free radicals is generated in the truder in a molten state under the condition that no tion can be conducted by using, for example, an exably produced in a manner such that the addition reac-4,292,414, the modified block copolymers can be preferapplication, U.S. Ser. No. 089,237, now U.S. Pat. No. as disclosed in the specification of prior co-pending preferable for use in the present invention. For instance, terials, such as gels or having a poor flowability, are not modified block copolymers confaming undesirable mainvention, production processes which produce the oesses of the modified block copolymers in the present -orq noisouborq adt ni noitationi on si snett dguodsfA a solution with or without using a free-radical initiator. acids, or the derivatives thereof, in a molten state or in tioned base block copolymers with the dicarboxylic invention can be obtained by reacting the above-men-The modified block copolymers used in the present dride.

anhydride. The most presenable one is maleic anhytives thereof, are maleic acid, fumaric acid and maleic thereof. Preferable dicarboxylic acids, and the derivaanhydrides, the esters, the amides and the imides 10 bicyclo [2,2,1]-5-heptene-2,3-dicarboxylic acid and the acid, cis-4-cyclohexene-1,2-dicarboxylic acid, endo-cismaleic acid, fumaric acid, chloromaleic acid, itaconic derivatives thereof, used in the present invention are Typical examples of the dicarboxylic acids, and the carned.

parts by weight, further improvement cannot be obobtained, whereas, when the amount is more than 20 parts by weight, the modification effects cannot be ylic scids, or the derivatives thereof, is less than 0.05

Set Name side by side		Hit Count	Set Name result set
DB=US	SPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
<u>L5</u>	tetra-n-butyl titanate and polyisocyanate and isobutanol	4	<u>L5</u>
<u>L4</u>	tetra-n-butyl titanate and polyisocyanate isobutanol	0	<u>L4</u>
<u>L3</u>	tetra-n-butyl orthotitanate and polyisocyanate	0	<u>L3</u>
<u>L2</u>	tetra-n-butyl titanate and polyisocyanate	61	<u>L2</u>
<u>L1</u>	tetra-n-butyl titanate	445	<u>L1</u>

END OF SEARCH HISTORY

Ź of 2

having two terminal hydroxyl groups, as obtainable in a ste polyethers having tertiary mitrogen atoms and preferably one another, consisting of 2 to 6 carbon atoms. Also suitable 65 diglycidyl ether is also particularly suitable. alkanediyl units of these tertiary amines, independently of and M-aminosikyldisikylamines, the alkyl radicals and tris(aminoalkyl)amines, N,N'-bis(aminoalkyl)alkylamines (phquoxhalkyl)alkylamines, N-hydroxyalkyldialkylamines, for example tris(hydroxyalkyl)amines, N,N'-bis monomers (83) are monomers having tentiary amino groups, Of particular practical importance as (potentially) cationic

example, in DE-A 1 495 745. Chemie, 4th edition, Volume 19, pages 311-313, and, for for example, in Ullmanns Encyklopadie der technischen 55 (Potentially) ionic monomers (a3) are described in detail,

tertiary amino groups. pydrophilic groups, for example carboxyl, anhydride or or quaternization reactions into the abovementioned ionic Potentially ionic hydrophilic groups are in particular those protonated tertiary amino or quaternary ammonium groups. catinnic groups, such as ammonium groups, in particular the form of their alkali metal or ammonium salts, and such as the sulfonate, carboxylate and phosphate group in as aminocthanecarboxylic acid and the corresponding lonic hydrophilic groups are in particular anionic groups,

.802,020,E bas 920,200,E .soV .1sq .2.U cyanates and processes for their preparation are described in terminal etherified polyethylene glycol radical. Such diisoste polychylene glycol and disocyanates which carry a Preferred monomers having nonionic hydrophilic groups

the amount by weight of all monomers (al) to (a5). from 0 to 10, preferably from 0 to 6% by weight, based on units. The content of polychylene oxide units is in general 100, especially from 10 to 80, repeating ethylene oxide 35 polyetnylene glycol ethers comprising, preferably, from 5 to Particularly suitable nonionic hydrophilic groups are preferably, (potentially) ionic hydrophilic groups.

The (potentially) hydrophilic groups may be nonionic or, based on the amount by weight of all monomers (a1) to (a5). 30 to 0.5, particularly preferably from 0.08 to 0.3, mol/kg, bydrophilic groups is from 0.03-to 1, preferably from 0.05 is in general such that the molar amount of the (potentially) bujic groups in the total amount of components (a1) to (a5)

ьојутст таш сват. nous! Stroups of the monomers used for synthesizing the with isocyanates substantially more slowly than the tunebprjic Stonba., The (potentially) hydrophilic groups react paquobpijic groups" is abbreviated to "(potentially) hydro- 20 (a2). Below, the term "hydrophilic groups or potentially paquobpijie groups, in addition to the components (al) and hydrophilic group or one group which can be converted into toward isocyanate groups and furthermore at least one least one isocyanate group or at least one group reactive 15 which differ from the components (a1) and (a2) and carry at polyurethanes, the latter are composed of monomers (a3)

In order to impart water dispersibility to the I:2 of I:2.0 mon) monomers (82.2) is from 0.2:1 to 5:1, particularly preferably 10 Particularly preferably, the ratio of the diols (a2.1) to the 90 mol %, based on the total amount of the diols (a2). the amount of the monomers (a.2.2) is preferably from 0 to 100 mol %, based on the total amount of the diols (a2), and

e of OI mort ylderstarq si (1.2s) aloib and to muome adT from 2 to 12 being preferred. straight-chain diols having an even number of earbon atoms non of polyesterpolyols are used as monomers (a2.2), the

scholyols which are composed at least partly of maleic acid Other suitable monomers (a4) are conventional polyes-

The adduct of acrylic or methacrylic acid and butanediol Honoride such as bisphenol (R) A and bisphenol F.

the bisadduct of acrylic acid and/or methacrylic acid with a or methacrylic acid and trimethylolpropane or glycerol or 60 C,-C6-alkyl methacrylate, mono- or diesters of acrylic acid hydroxychył acrylate and hydroxypropyl acrylate, hydroxyholic hydroxyl group, preferably 2 slcobolic hydroxyl groups, eg. —Co-sikyl scrylates, eg. monomers (a2) and (a3) are compounds having one alco-Particularly suitable monomers (a4) differing from the or an ammonium ion as the opposite ion.

preferably in the form of their salts with an alkali metal ion reaction mixime. The carboxylate groups are particularly monomers are frequently only sparingly soluble in the which can be converted by simple neutralization, hydrolysis so preferably, after the isocyanate polyaddition, since the ionic they may be converted into the ionic form before, during or, If monomers having potentially ionic groups are used,

units consisting of 2 to 6 carbon atoms. M-aminoalkylaminoalkylcarboxylic acids, the alkanediyl acids, such as N-(2-aminocihyl)-2-211 subparic diprimary diamines with a p-unsaturated carboxylysine, β-alanine, the adducts, stated in DE-A 2 034 479, of toward isocyanates are aminocarboxylic acids, such as Suitable monomers (a3) having amino groups reactive (I.Ss)

monomers (\$2.2) mentioned as chain extenders and the diols o I.05:1. Particularly suitable dihydroxy compounds are the tanctetracarboxylic dianhydride, in a molar ratio of from 2:1 disnbydrides, such as pyromelliue dianhydride or cyclopencombounds to a polyaddition reaction with tetracarboxylic 911 827. They are obtainable by subjecting dihydroxy also suitable, said compounds being disclosed in DE-A 3 200 to 10000 g/mol and at least 2 carboxylate groups are Dibydroxy compounds having a molecular weight of from

acid, are also suitable. phosphonic scids, such as 2,3-dihydroxypropanephosphonic Corresponding dihydroxysulfonic scids and dihydroxydimethylolpropionic acid (DMPA).

The proportion of components having (potentially) bydro- 25 a C1-C4-alkyl unit, are particularly preferred, especially where R' and R' are each a C1-C4-alkanediyl unit and R' is

are preferred. Compounds of the general formula carbon atoms, as also described in U.S. Pat. No. 3,412,054, Dihydroxyalkylcarboxylic acids, especially of 3 to 10 smoure groups

group are usually suitable as monomers having (potentially) hydroxyl group or at least one primary or secondary amino lic scids and sulfonic scids which carry at least one alcoholic Aliphane, cycloaliphane, arabphane or aromane carboxymides or chlorides

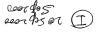
ing agents, such as C1-C6-alkyl balides, for example broenoug organic acids or by reaction with suitable quaternizas phosphoric acid, sulfuric acid or hydrobalic acids, or salts either with sends, preferably strong mineral sends, such These tertiary amines are converted into the ammonium ally have a molecular weight of from 500 to 5000 g/mol. surjuse of M,W-dimethylbydrazine. Such polyethers generhydrogen atoms bonded to amine nitrogen, eg. methylamine, conventional manner by alkoxylation of amines baying two

neuts of the short-chain alkanediols stated for the prepara-

Set Name side by side	Query	Hit Count	Set Name result set
DB = USI	PT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
<u>L7</u>	tetra near n near butyl titanate and polyisocyanate [clm]	17	<u>L7</u>
<u>L6</u>	tetra near n near butyl titanate and polyisocyanate [ab]	4	<u>L6</u>
<u>L5</u>	tetra near n near butyl titanate and polyisocyanate [ti]	0	<u>L5</u>
<u>L4</u>	tetra near n near butyl titanate and polyisocyanate	63	<u>L4</u>
<u>L3</u>	tetra near n near butyl titanate	537	<u>L3</u>
<u>L2</u>	tetra near n near butyl titanate and 6060573 [pn]	0	<u>L2</u>
<u>L1</u>	tetra-n-butyl titanate and 6060573 [pn]	0	<u>L1</u>

END OF SEARCH HISTORY

10/079661



Page 2

Application/Control Number: 09/324714

IIVI : JinU nA

bracticed.

regards as the invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

Claim 9 provides for the use of polyethylene as an antidrip agent in molding

compositions, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it mertely recites a use without any active, positive steps delimiting how this use is actually

Claim 9 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example Ex

parte Dunki, 153 USPQ 678 (Bd.App. 1967) and Clinical Products, Ltd. v. Brenner, 255 F.

Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim 4 is indefinite since it is not known which type of av. Molecular weight is

envisioned (in lines 2-3).



Search Results - Record(s) 1 through 4 of 4 returned.

1. Document ID: US H000752 H

L4: Entry 1 of 4 File: USPT Mar 6, 1990

US-PAT-NO: H000752

DOCUMENT-IDENTIFIER: US H000752 H

TITLE: Magnetic recording medium

DATE-ISSUED: March 6, 1990

INVENTOR - INFORMATION:

Koyama; Shigeru

NAME

CITY Suzuki: Atsushi

US-CL-CURRENT: 428/694BU; 428/694BS

Utsunomiya Ichikai

ZIP CODE

COUNTRY

JP JP

Full Title Citation Front Review Classification Date Reference Sequences Attachments

Draw, Deso | Image

Document ID: US 4837245 A

L4: Entry 2 of 4

File: USPT

STATE

Jun 6, 1989

US-PAT-NO: 4837245

DOCUMENT-IDENTIFIER: US 4837245 A

TITLE: Process for the preparation of non-cellular or cellular polyurethane elastomers in the presence of a polyester polyol containing therein titanium and/or tin compounds as catalysts

DATE-ISSUED: June 6, 1989

INVENTOR - INFORMATION -

NAME CITY STATE ZIP CODE COUNTRY Streu; Joachim Diepholz DE

Straehle; Wolfgang Heidelberg DE Ramlow; Gerhard Weinheim DE

US-CL-CURRENT: 521/117; 252/182.14, 252/182.3, 502/102, 502/151, 521/123, 521/127, 521/172, 521/173, 528/56, 528/58, 528/66

Full Title Citation Front Review Classification Date Reference Sequences Attachments Draw Desc Image

Once the precipitate has been stabilized, residual water can be removed from the precipitate by centrifugation. The cellulose ester/functional additive blend is then dried by conventional techniques.

- The invention further relates to a process for preparing a cellulose ester/functional additive blend, comprising:
- real a bas 19189 oscilulos outh the with the cetter and a discimbe (e)
- (a) admixing the functional additive with the cellulose ester and a first acid;
- (b) depositing the admixture of step (a) in a pelleter:

(a)

20

- (c) extruding the admixture from the pelleter;
- (a) immediately after step (c) or simultaneous with step (c), contacting
 the extruded admixture with a precipitating agent to precipitate the
 tellulose ester/functional additive to thereby produce an extrusion of
- the cellulose ester/functional additive blend; and cutting the precipitated extrusion into pellets.
- As described above, the admixture comprising the cellulose ester, the functional additive and the first acid are added to a bath containing a precipitating a gent in order to coprecipitate the cellulose ester/functional additive blend. In pelleter prior to contacting the admixture of step (a) can be added to a morbiter embodiment of the invention, the admixture of step (a) can be added to a pelleter prior to contacting the admixture with the precipitating agent. Pelleters useful in the present invention are known in the art. In another embodiment, prior to adding the admixture of step (a) to the pelleter, the admixture and pelleter are heading the admixture of step (a) to the pelleter, the admixture and pelleter are headed. In one embodiment, the admixture is heated from 5 to 60°C, preferably, 5

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to 15°C, and the pelleter is heated from 5 to 60°C, preferably 5 to 15°C. In one

3. Document ID: US 4808477 A

L4: Entry 3 of 4

File: USPT

Feb 28, 1989

US-PAT-NO: 4808477

DOCUMENT-IDENTIFIER: US 4808477 A

TITLE: Urethane modified nylon magnet wire enamel

DATE-ISSUED: February 28, 1989

INVENTOR-INFORMATION:

NAME CITY STATE

ZIP CODE

COUNTRY

Harber; Joseph J.

Fort Wayne

IN

US-CL-CURRENT: 428/389; 427/117, 427/120, 427/388.1, 428/383, 428/458, 428/470 Full Title Citation Front Review Classification Date Reference Sequences Attachments

4. Document ID: US 4725458 A

L4: Entry 4 of 4

Praw. Deso Image

File: USPT

Feb 16, 1988

US-PAT-NO: 4725458

DOCUMENT-IDENTIFIER: US 4725458 A

TITLE: Urethane modified nylon magnet wire enamel

DATE-ISSUED: February 16, 1988

INVENTOR - INFORMATION: Harber; Joseph J.

NAME CITY

Fort Wayne

STATE IN

ZIP CODE

COUNTRY

US-CL-CURRENT: 427/388.1; 427/120, 428/379, 428/383, 525/420, 525/424, 525/425

Full Title Citation Front Review Classification Date Reference Sequences Attachments Errawi Desc | Image

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embodiment, prior to step (c) the temperature of the pelleter is adjusted to

-5 to 25°C.

In one embodiment, the pelleter containing the admixture of step (a) is

- comprising the cellulose ester/ functional additive is produced. In one admixture of step (a) into the bath containing the precipitating agent, a pellet precipitating agent comprises a second acid. Once the pelleter extrudes the embodiment, the precipitating agent is water. In another embodiment, the the pelleter is submerged into a bath comprising the precipitating agent. In one contacted with the precipitating agent. In another embodiment, the cutter end of
- contacting step. embodiment, the precipitating agent is heated from 0 to 23°C prior to the

residual water as described above for the powder process. the pellets can be washed with water, treated with a stabilizer, and dried to remove Once the pellet of the cellulose ester/functional additive blend is produced,

PREPARATION OF A CONTROLLED RELEASE MATRIX SYSTEM

- matrix system, comprising: agricultural additive, preferably, comprising dispensing the controlled release described herein, the invention relates to a method for controlled release of an In accordance with the purposes of this invention, as embodied and broadly 50
- at least one biodegradable cellulose ester; and (B) 52
- (q) at least one agricultural additive,
- wherein components (a) and (b) form a controlled release matrix system,

Set Name side by side	Query	Hit Count	Set Name result set
DB = USP	T,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
L.5	tetra-n-butyl titanate and polyisocyanate [clm]	17	<u>L5</u>
<u>L4</u>	tetra-n-butyl titanate and polyisocyanate [ab]	4	<u>L4</u>
<u>L3</u>	tetra-n-butyl titanate and polyisocyanate [ti]	0	<u>L3</u>
<u>L2</u>	tetra-n-butyl titanate and polyisocyanate	61	<u>L2</u>
<u>L1</u>	tetra-n-butyl titanate	445	<u>L1</u>

END OF SEARCH HISTORY

5,580,911; and 5,559,171 are incorporated herein by reference for a detailed discussion on biodegradability. Biodegradability can also occur by use of fungi.

- Biodegradation of cellulose esters in a composing environment has been a demonstrated. The factors that effect the rate of degradation are the type of substituent (i.e. acetate, propionate or butyrate) and the degree of substitution of the cellulose. Typically, lower DS material degrades faster than high DS material and smaller substituents (acetate) degrade faster than larger ones.
- A number of cellulose esters were synthesized from ¹⁴C-labelled acetate and subjected to a composing environment. The release of ¹⁴CO₂ produced by degradation of the material was monitored and was used as an indicator of the degradation of the ester linkages. As illustrated by the figure below, the degradation of cellulose acetate with DS 1.85, as evidenced by the production of 1.4CO₂, is rapid with the majority of the material degrading within a week.

 Cellulose acetates with higher degrees of substitution require much longer periods 1.4CO₃, is the degraded after 2 weeks of time to degrade. For example, cellulose acetate with DS 2.5 remains only of time to degraded after 2 weeks time.

NAME	CITY	STATE	COUNTRY
Gindin, Lyubov K.	Pittsburgh	PA	US
Henderson, Karen M.	Coraopolis	PA	US
Lee, Sze-Ming	Houston	TX	US
Long, Brian	Clarington	OH	US

US-CL-CURRENT: 524/589; 524/839

Full Title Citation Front Review Classification Date Reference Sequences Attachments

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RULE-47

5. Document ID: US 6444746 B1

L7: Entry 5 of 22

File: USPT

Sep 3, 2002

US-PAT-NO: 6444746

DOCUMENT-IDENTIFIER: US 6444746 B1

TITLE: Aqueous <u>polyurethane</u> dispersions containing pendant amide groups and their use in one-component thermoset compositions

DATE-ISSUED: September 3, 2002

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Gindin; Lyubov K. Pittsburgh PA
Henderson; Karen M. Coraopolis PA
Lee; Sze-Ming Houston TX
Long; Brian Clarington OH

US-CL-CURRENT: 524/591; 428/423.1, 524/839, 524/840

Full Title Citation Front Review Classification Date Reference Sequences Attachments

- Draw Desc Image

KIRAC

☐ 6. Document ID: US 6362300 B1

File: USPT

Mar 26, 2002

US-PAT-NO: 6362300

DOCUMENT-IDENTIFIER: US 6362300 B1

TITLE: Moisture-curable polyurethane compositions

DATE-ISSUED: March 26, 2002

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Araki: Kiminori Kanagawa JΡ Matsuda; Hidevuki Kanagawa JP Nishi; Eiji Kanagawa JP Samata; Takahiro Kanaqawa JP

US-CL-CURRENT: 528/28; 524/115, 524/126, 524/425, 528/38, 528/58, 544/106

7000///50/10 1

general description and the following detailed description are exemplary and explanatory only and are not restrictive of the invention, as claimed.

DETAILED DESCRIPTION OF THE INVENTION

Before the present compositions of matter, products and methods are disclosed and described, it is to be understood that this invention is not limited to specific synthetic methods or to particular formulations, as such may, of course, O vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting.

As used in the specification and in the claims, "a" can mean one or more, depending upon the context in which it is used.

In this specification and in the claims which follow, reference will be made to a number of terms which shall be defined to have the following meanings:

The term "functional additive" as used herein refers to cellulosic plastic modifiers. These modifiers can include, but are not limited to, plasticizers, other polymers, UV light stabilizers, dyes and pigments, acid stabilizers, agricultural

After melt and/or solid phase polycondensation the polycerers have an aniherent and $\Delta = 10.75$ diversity $\Delta = 10.75$ $\Delta = 10.75$ diversity

chemicals, and bioactive compounds.

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inherent viscosity (L.V.) of about 0.65 to about 1.2 dL/g, preferably 0.75 dL/g measured at 25°C in a 60/40 ratio by weight of phenol/tetrachloroethane.

"Other polymer" or "another polymer" is defined as a polymer which is not included as one of the other functional additives listed herein. The polymers of this

ZIP CODE

Full Title Citation Front Review Classification Date Reference Sequences Attachments Draw Desc Image

Document ID: US 6103849 A L7: Entr

File: USPT

STATE

PA

wv

PA

PA

Aug 15, 2000

COUNTRY

US-PAT-NO: 6103849

DOCUMENT-IDENTIFIER: US 6103849 A

TITLE: Storage stable, heat curable polyurethane compositions

DATE-ISSUED: August 15, 2000

INVENTOR - INFORMATION :

NAME CITY Squiller; Edward P.

Pittsburgh Rosthauser: James W. Glen Dale Markusch; Peter H. McMurray

Potter; Terry A. Beaver

US-CL-CURRENT: 528/45; 528/59

Full Title Chation Front Review Classification Date Reference Sequences Attachments Eraw Desc | Image

8. Document ID: US 6063861 A

File: USPT

May 16, 2000

L7: Entry 8 of 22 US-PAT-NO: 6063861 DOCUMENT-IDENTIFIER: US 6063861 A

TITLE: Self crosslinkable polyurethane-polyacrylate hybrid dispersions

DATE-ISSUED: May 16, 2000

INVENTOR-INFORMATION:

Draw Desc Image

NAME CITY STATE ZIP CODE COUNTRY Irle; Christoph Krefeld

DE Blum: Harald Leverkusen DE Kremer; Wolfgang Kerken DE Roschu: Rolf Willich DE

US-CL-CURRENT: 524/591; 428/423.1, 428/425.1, 524/507, 524/539, 524/839, 524/840, 525/123, 525/455

Full Title Citation Front Review Classification Date Reference Sequences Attachments

9. Document ID: US 6046270 A

poly(ethylene glutarate-co-terephthalate) [70/30], poly(tetramethylene glutarate-copoly(diethylene glutarate), poly(ethylene glutarate-co-terephthalate) [85/15], glutarate), poly(tetramethylene adipate), poly(hexamethylene glutarate), suitable for this invention are: poly(ethylene glutarate), poly(tetramethylene diethylene glycol, hexanediol and polyethylene glycol. Examples of polyesters diesters may be polymerized with several diols such as ethylene glycol, butanediol, isophthalate and dimethyl 2,6-naphthalene dicarboxylate. These diacids and (or diesters) above and aromatic diesters such as dimethyl terephthalate, dimethyl acids (or esters). Aliphatic-aromatic copolyesters may be prepared from the diacids prepared from discids (or diesters) such as glutaric, adipic, succinic, and sebacic removed from the mixture. The aliphatic polyesters of this invention may be increasing the temperature and lowering the pressure while excess diol(s) is and elevated pressure under nitrogen. Polycondensation is then effected by dicarboxylic acid is esterified with the diol(s) at temperatures of 200 C to 270 C and more preferably in the range of about 200 C to 270 C. Normally, the transesterification catalysts at temperatures in the range of about 150 C to 300 C, or more diols may be heated in the presence of esterification and/or preferably aliphatic dicarboxylic acids or ester forming derivatives thereof, and one For example, a mixture of one or more aromatic or aliphatic dicarboxylic acids, reaction should occur at a temperature to effect esterification and polycondensation. may be prepared according to polyester forming conditions known in the art. The concentration of 0.5 weight% in tetrachlorethane / phenol [40.60]. The polyesters and a preferred inherent viscosity of between 0.40 and 1.60 dL/g as measured at a polyesters of this invention may have an inherent viscosity greater than 0.40 dL/g combinations or compositions with the cellulose esters described herein. The this invention may be miscible, partially miscible, or immiscible in certain aliphatic copolyester, and more preferably an aliphatic polyester. The polyesters of polyester known in the art, but is preferably an aliphatic polyester, or an aromaticinvention are preferably polyesters. The polyesters of this invention can be any

Record List Display

File: USPT

Apr 4, 2000

COUNTRY

L7: Entry 9 of 22 US-PAT-NO: 6046270

DOCUMENT-IDENTIFIER: US 6046270 A

TITLE: Silane-modified polyurethane resins, a process for their preparation and their use as moisture-curable resins

DATE-ISSUED: April 4, 2000

INVENTOR - INFORMATION:

NAME CITY

STATE ZIP CODE

Wexford PA

Roesler; Richard R. Schmalstieg; Lutz Cologne DE

US-CL-CURRENT: 524/590; 524/588, 524/589, 528/28, 528/44, 528/60, 528/85

Full Title Citation Front Review Classification Date Reference Sequences Attachments

Draw, Desc Image

10. Document ID: US 5710209 A

L7: Entry 10 of 22 File: USPT Jan 20, 1998

KWIC

US-PAT-NO: 5710209

DOCUMENT-IDENTIFIER: US 5710209 A

TITLE: Aqueous binders for coating compositions based on polyester polyurethanes

DATE-ISSUED: January 20, 1998

INVENTOR - INFORMATION:

Pedain; Josef

NAME CITY Blum: Harald

Wachtendonk

STATE

ZIP CODE

DE

COUNTRY

Koln

DE

US-CL-CURRENT: 524/591; 524/538, 524/839, 524/840

Full Title Citation Front Review Classification Date Reference Sequences Attachments Erram Desc Image

KWIC

11. Document ID: US 5656712 A

File: USPT

Aug 12, 1997

COUNTRY

US-PAT-NO: 5656712

L7: Entry 11 of 22

DOCUMENT-IDENTIFIER: US 5656712 A

TITLE: Polyurethane compositions and method

DATE-ISSUED: August 12, 1997

INVENTOR - INFORMATION:

NAME

CITY

STATE

ZIP CODE

Mirossay; Thomas C. Arlington ТX 76018

5 of 11

and polyhydroxyvalerate.

52

crephirhalate) [85/15], poly(tetramethylene adipate-co-terephirhalate) [85/15], poly(tetramethylene adipate-co-terephirhalate) [70/30], poly(tetramethylene-co-ethylene glutarate-co-terephirhalate) [70/30], poly(tetramethylene-co-ethylene glutarate-co-terephirhalate) [50/50; 70/30], poly(tetramethylene-co-ethylene glutarate-co-polyterhylene glutarate-co-terephirhalate) [50/50; 70/30], poly(tetramethylene-co-ethylene glutarate-co-terephirhalate) [70/30], poly(tethylene-co-terephirhalate) [50/50; 70/30], poly(tethylene-co-terephirhalate) [50/50], poly(tethylene-co-terephirhalate) [50/50], poly(tethylene-co-terephirhalate) [50/50/50], poly(tethylene-co-terephirhalate) [50/50], poly(tethylene

Well known in the art. The resculon should occur at a temperature to effect esterification and polycondensation. For example, a mixture of one or more esterification and polycondensation. For example, a mixture of one or more dicarboxylic acids, preferably aromatic dicarboxylic acids, or ester forming derivatives thereof, and one or more diols may be heated in the presence of derivatives thereof, and one or more diols may be heated in the presence of esterification and/or transacterification analyst ransacterification estalysts at temperatures in the range of about 150° to about 300°C, preferably, about 200°C to about 300°C, and even more preferably, about 200°C to about 300°C, and even more more about 50°C and even more about 150° to about 30°C, and even more preferably, about 20°C to about 150°C to about 50°C to about 0.2 mm Hg. Normally, the dicarboxylic acid is esterified with the diol(s) at elevated pressure and at a temperature at about 20°C. Polycondensation then is effected by increasing the temperature and at a te

The term "degree of substitution" as used herein refers to the number of substitutents per anhydroglucose unit where the maximum DS/AGU is three. The term "degree of substitution" will also be referred to as "DS" or DS/AGU" throughout the application.

excess diol is removed from the mixture.

US-CL-CURRENT: 528/56; 528/61, 528/905

Full Title Citation Front Review Classification Date Reference Sequences Attachments

KWIC

12. Document ID: US 5610232 A

L7: Entry 12 of 22

File: USPT

Mar 11, 1997

US-PAT-NO: 5610232

DOCUMENT-IDENTIFIER: US 5610232 A

 ${\tt TITLE:}$ Aqueous non-gelling, anionic $\underline{{\tt polyurethane}}$ dispersions and process for their manufacture

DATE-ISSUED: March 11, 1997

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Duan; Youlu Minneapolis MN
Stammler; Sonja St. Criox MN
Rhein; Scott Forest Lake MN
Lindquist; Lowell St. Paul MN

US-CL-CURRENT: 524/840; 156/331.1, 156/331.4, 156/331.7, 428/423.1, 428/423.1, 428/423.7, 428/424.2, 428/424.6, 428/424.8, 428/425.1, 428/425.8, 524/507, 524/507, 524/501, 525/223, 525/127, 525/446, 525/455, 525/457, 525/526, 528/17, 528/905

Full Title Citation Front Review Classification Date Reference Sequences Attachments Draw, Desc | Image |

KWIC

13. Document ID: US 5608000 A

L7: Entry 13 of 22

File: USPT

Mar 4, 1997

US-PAT-NO: 5608000

DOCUMENT-IDENTIFIER: US 5608000 A

TITLE: Aqueous polyurethane dispersion adhesive compositions with improved heat resistance

DATE-ISSUED: March 4, 1997

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Duan; Youlu Minneapolis MN

Stammler; Sonja Marine On the St. Croix MN

US-CL-CURRENT: <u>524/591</u>; <u>428/423.1</u>, <u>428/423.4</u>, <u>428/423.7</u>, <u>428/424.2</u>, <u>428/424.6</u>, <u>428/424.8</u>, <u>428/425.1</u>, <u>428/425.6</u>, <u>524/500</u>, <u>524/507</u>, <u>524/800</u>, <u>525/123</u>, <u>525/127</u>, <u>525/426</u>, <u>525/453</u>, <u>525/454</u>, <u>525/455</u>, <u>525/457</u>, <u>525/528</u>, <u>528/717</u>, <u>528/905</u>

BLEND BY COPRECIPITATION PREPARATION OF A CELLULOSE ESTER/FUNCTIONAL ADDITIVE

- blending a cellulose ester with a functional additive, comprising: broadly described herein, the invention, in one aspect, relates to a process for In accordance with the purpose(s) of this invention, as embodied and 9
- acid; and 10 admixing the functional additive with the cellulose ester and a first **(9)**
- additive coprecipitates. whereby a blend comprising the cellulose ester and the functional contacting the admixture with an aqueous precipitating agent, (q)
- The invention further relates to a process for blending a cellulose ester with 91
- admiximba a functional additive, comprising:

(a)

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- retardant, an agricultural chemical, bioactive compound or a mixture UV light stabilizer, a dye, a pigment, an acid stabilizer, a flame a functional additive comprising a plasticizer, another polymer, a (i
- propionate, cellulose acetate propionate, carboxymethylcellulose phthalate, cellulose acetate butyrate, cellulose butyrate, cellulose a cellulose ester comprising cellulose acetate, cellulose acetate (ii 52 thereof,

acetate, carboxymethylcellulose acetate propionate,

Full Title Citation Front Review Classification Date Reference Sequences Attachments Draw Deso Image

14. Document ID: US 5548057 A

L7: Entry 14 of 22

File: USPT

Aug 20, 1996

US-PAT-NO: 5548057

DOCUMENT-IDENTIFIER: US 5548057 A

TITLE: One-component-type composition for polyurethane elastomer and method for processing the same by molding

DATE-ISSUED: August 20, 1996

INVENTOR - INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Hiravama; Shinii Hadano JP Konishi; Shin Fujisawa JP Hidai; Takao Anjo JP Hama; Shinjiro Fujisawa JP Hashimoto; Sadako Hadano JP Morikawa; Yukihiro Yokohama JP

US-CL-CURRENT: 528/67

Full Title Citation Front Review Classification Date Reference Sequences Attachments

1000C

15. Document ID: US 5142014 A

L7: Entry 15 of 22

File: USPT

Aug 25, 1992

US-PAT-NO: 5142014

DOCUMENT-IDENTIFIER: US 5142014 A

TITLE: Ambient temperature curable one-component polyurethane or polyurea compositions DATE-ISSUED: August 25, 1992

INVENTOR-INFORMATION:

NAME

CITY

STATE

PA

wv

ZIP CODE

COUNTRY

Markusch; Peter H.

McMurray

Squiller; Edward P.

Wheeling

US-CL-CURRENT: 528/45; 528/44, 528/60, 528/62, 528/64, 528/71

Full Title Citation Front Review Classification Date Reference Sequences Attachments Draw, Desc Image

KWIC

16. Document ID: US 5138011 A

L7: Entry 16 of 22

File: USPT

Aug 11, 1992

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succinate, or a mixture thereof, and carboxymethylcellulose acetate butyrate, cellulose acetate butyrate

mixture thereof, and 9 a first acid comprising acetic acid, propionic acid, butyric acid or a (iii

the functional additive coprecipitates. mixture thereof, whereby a blend comprising the cellulose ester and comprising water, acetic acid, propionic acid, butyric acid, or a (q) contacting the admixture with an aqueous precipitating agent

precipitate phase. desired chemicals or chemical compounds are incorporated into the resulting precipitate by the addition of a precipitant, such that the greater fraction of the admixture solution or suspension in the presence of a solvent or solvent mixture to refers to the act of eausing two or more chemicals or chemical compounds in an water or aqueous carboxylic acid(s). As used herein, the term "coprecipitation" and a functional additive by coprecipitation from carboxylic acid(s) dopes, into The invention relates to a method of producing a blend of a cellulose ester

retardant, an agricultural chemical (i.e. pesticide, herbicide, fertilizer, trace phosphites known in the art, a dye or a pigment, an acid stabilizer, a flame additive can be a plasticizer, another polymer, a UV light stabilizer such as organic precipitated cellulose ester blend. In a particular embodiment, the functional In one embodiment, a functional additive can be incorporated into the 50

dye, or a mixture thereof. preferred embodiment, the functional additive is a plasticizer, a UV stabilizer, a mineral), a bioactive compound (i.e. medicaments), or a mixture thereof. In a more

KildC

US-PAT-NO: 5138011

DOCUMENT-IDENTIFIER: US 5138011 A

TITLE: One-component polyurethane or polyurea compositions

DATE-ISSUED: August 11, 1992

INVENTOR-INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Markusch; Peter H. McMurray PA

Squiller; Edward P. Wheeling wv

US-CL-CURRENT: 528/45; 528/44, 528/52, 528/64

Full Title Citation Front Review Classification Date Reference Sequences Attachments

Draw Deso Image

17. Document ID: US 5124447 A

L7: Entry 17 of 22 File: USPT Jun 23, 1992

US-PAT-NO: 5124447

DOCUMENT-IDENTIFIER: US 5124447 A

TITLE: Ambient temperature curable one-component polyurethane or polyurea compositions

DATE-ISSUED: June 23, 1992

INVENTOR - INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY

Squiller; Edward P. Wheeling wv Markusch; Peter H. McMurray PA

US-CL-CURRENT: 528/45; 523/414, 523/415, 523/417, 528/60, 528/68, 528/73

Full Title Citation Front Review Classification Date Reference Sequences Attachments

Draw Desc Image

18. Document ID: US 4425468 A L7: Entry 18 of 22 File: USPT Jan 10, 1984

US-PAT-NO: 4425468

DOCUMENT-IDENTIFIER: US 4425468 A

TITLE: Polyurea-polyurethane acrylate polymer dispersions

DATE-ISSUED: January 10, 1984

INVENTOR-INFORMATION: Makhlouf; Joseph M.

NAME CITY STATE ZIP CODE COUNTRY

Mars

McCollum; Gregory J. Glenshaw PΑ Kerr; Paul R. Allison Park PA

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Examples of plasticizers suitable for the present invention include, but are not limited to, dioctyl adipate, triethylene glycol-2-ethylhexanoate, polyethylene glycol-2-ethylhexanoate, polyethylene glycol-2-ethylhexanoate, polyethylene succinate, citrate, tripropinoin, polypropylene glycol dibenzoate, polyethylene succinate, paucrose acetate isobutyrate, triphenyl phosphate, polyatkyl glycoside, triethyl phosphate, citrate, diethyl phthalate, 2,2,4-trimethyl-1,3-pentane-diol disobutyrate, a copolymer of phthalic acid, 1,3-butanediol, and 1,4-butanediol end capped by aliphatic epoxide, or a mixture thereof.

- Examples of UV stabilizers and antioxidants suitable for the present invention include, but are not limited to, epoxides of a natural oil, and mineral oil, organic phosphites, or a mixture thereof.
- Examples of organic dyes suitable for the present invention include, but are not limited to, C.I. Solvent Violet 13, C.I. Pigment Blue 15, C.I. Pigment Blue 28, C.I. Dispersion Violet 8, and C.I. Pigment Red 122. A preferred dye is C.I. Solvent Violet 13.
- A wide variety of agricultural additives can be used in the present invention.

 Do note embodiment, the agricultural additive comprises an insecticide, a herbicide, a pesticide, a fertilizer, a trace mineral, or a mixture thereof.

 In proches embodiment, the agricultural addition is an insecticide.
- In another embodiment, the agricultural additive is an insecticide comprising an organochlorine compound, an organophosphate compound, a carbamate compound, a heterocyclic compound, a dinitrophenol compound, a formamidine compound, a dinitrophenol compound, a norganorin compound, a pyrethroid compound, a dinitrophenol compound, a magnitude of an acylurea compound, a pyrethroid compound, an inorganic compound, a funigant compound, a repellant compound, an inorganic

compound, or a mixture thereof.

US-CL-CURRENT: 524/710; 524/840, 525/440, 525/455, 525/459, 525/920, 526/75, 528/75

Full Title Citation Front Review Classification Date Reference Sequences Attachments Drawa Deso Image 19. Document ID: US 4373081 A L7: Entry 19 of 22 File: USPT Feb 8, 1983 US-PAT-NO: 4373081 DOCUMENT-IDENTIFIER: US 4373081 A TITLE: Coating compositions and process for the production of polyurethane coatings DATE-ISSUED: February 8, 1983 INVENTOR-INFORMATION: NAME CITY STATE ZIP CODE COUNTRY Nachtkamp; Klaus Cologne DE Bock: Manfred Leverkusen DE Mennicken: Gerhard Leverkusen DE Pedain; Josef Cologne DE US-CL-CURRENT: 528/45; 428/423.1, 428/425.8 Full Title Citation Front Review Classification Date Reference Sequences Attachments Draw, Desc | Image | 7 20. Document ID: US 4173691 A L7: Entry 20 of 22 File: USPT Nov 6, 1979 US-PAT-NO: 4173691 DOCUMENT-IDENTIFIER: US 4173691 A TITLE: Catalyst composition for flexible polyurethane foams DATE-ISSUED: November 6, 1979 INVENTOR - INFORMATION : NAME CITY STATE ZIP CODE COUNTRY Treadwell; Kenneth Rahway NJ US-CL-CURRENT: 521/124; 502/170, 521/125 Full Title Citation Front Review Classification Date Reference Sequences Attachments KMC Franc Desc | Image | 21. Document ID: US 3953169 A L7: Entry 21 of 22 File: USPT Apr 27, 1976

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prallethrin; or tralomethrin. In another embodiment, the acylurea comprises cyfluthrin; delta methrin esfenvalerate; fenpropathrin; flucythrinate; fluvalinate; phonothrin; fenvalerate; permethrin; bifenthrin; lambda cyhalothrin; cypermethrin; pyrethroid comprises allethrin; tetramethrin; bioresmethrin; bioallethrin; compound comprises cyhexatin or fenbutatin-oxide. In another embodiment, the compound comprises binapacryl or dinocap. In another embodiment, the organotin chlordimetorm; formetanate; or amitraz. In another embodiment, the dinitrophenol promecarb; or fenoxycarb. In another embodiment, the formamidine comprises methiocarb; propoxur; bendiocarb; carbosulfan; aldoxycarb; trimethacarb; carpsmate comprises carbaryl; methomyl; carbofutan; aldicarb; oxamyl; thiodicarb; compound comprises tetradifon; propargite or ovex. In another embodiment, the chlorpyrifos-methyl; or azinphos-ethyl. In another embodiment, the organosulfur diazinon; azinphos-methyl; chlorpyrifos; methidathion; phosmet; isazophos; famphur. Examples of heterocyclic compounds include, but are not limited to, methyl parathion; profenofos; sulprofos; isofenphos; fenitrothion; fenthion; or Examples of phenyl compounds include, but are not limited to, ethyl parathion; qictotobhos; qisultoton; qichlorvos; mevinphos; methamidophos; or acephate. malathion; trichlorofon; monocrotophos; dimethoate; oxydemetonmethyl; compound. Examples of aliphatic compounds include, but are not limited to, phosphate compound; an aryl phosphate compound; or a heterocyclic phosphate or strobane. In another embodiment, the organophosphate comprises an aliphatic cylordecone. In another embodiment, the polychloroterpene comprises toxaphene comprises chlordane; aldrin; dieldrin; heptachlor; endrin; mirex; endosulfan; or ethylan; chlorbenzilate; or methoxychlor. In another embodiment, the cyclodiene bis(p-chlorophenyl)ethane; 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane; dicofol; In one embodiment, the diphenyl aliphatic compound comprises 1,1-dichloro-2,2sliphatic compound; hexachlorocyclohexane; a cyclodiene; or a polychloroterpene. In another embodiment, the organochlorine compound comprises a diphenyl

triflumuron; chlorfluazuron; teflubenzuron; hexaflumuron; flufenoxuron;

US-PAT-NO: 3953169 DOCUMENT-IDENTIFIER: US 3953169 A

TITLE: Paperboard impregnated with polyurethane resin

DATE-ISSUED: April 27, 1976

INVENTOR - INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Igarashi: Seiichi Suita JA Shirakawa; Kin-ichi Ibaraki JA Kimura; Kazuo Kobe JA Ogino; Akira Shinsenri-Higashi

US-CL-CURRENT: 8/192; 428/425.1, 428/537.5, 528/73, 528/77, 528/83, 8/DIG.11

Full Title Citation Front Review Classification Date Reference Sequences Attachments Dram Desc Image

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22. Document ID: US 3886226 A

L7: Entry 22 of 22 File: USPT May 27, 1975

US-PAT-NO: 3886226

DOCUMENT-IDENTIFIER: US 3886226 A

TITLE: Polyurethane composition

DATE-ISSUED: May 27, 1975

INVENTOR - INFORMATION:

NAME CITY STATE ZIP CODE COUNTRY Asai; Kiyotsugu Kawasaki JA Kawabata; Toshihiko Tokvo JΑ Sakai; Koichi Tokyo JA Fukuda; Kiyo Yokohama JA Nagahisa; Seiji Kawasaki JA Ichikawa; Toshiyuki Tokyo JA

US-CL-CURRENT: 528/28; 428/425.6, 428/429, 525/440, 525/446, 528/26, 528/29, 528/38, 528/49, 528/61, 528/65, 528/68

Full Title Citation Front Review Classification Date Reference Sequences Attachments Draw Desc Image

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flucycloxuron; or novaluron. In another embodiment, the botanical compound comprises pyrethrum; nicotine; camphor; turpentine; rotenone; limonene; or neem oil. In another embodiment, the embitiotic comprises avermectine. In another embodiment, the fumigant comprises or enradibilorobenzene. In another embodiment, the repellant comprises dimethyl brithalate; ethylene dichloride; sulfuryl embodiment, the repellant comprises dimethyl phthalate; dibutyl phthalate; benzyll benzoate; N-butyl scenarilide; dimethyl carbate; or diethyl toluamide. In another embodiment, the inorganic compound comprises sulfur; mercury; thallium; embodiment, the inorganic compound comprises sulfur; mercury; thallium; animony; copper arsenate; inorganic fluorides; boric acid; disodium octaborate; or animony; copper arsenate; inorganic fluorides; boric acid; disodium octaborate; or

In another embodiment, the agricultural additive is a herbicide comprising an ALSase inhibitor, an ACCase inhibitor, an isoxazolidone, paraquat or a mixture.

ESP'sase intimprior, an ACLass inninotor, unitroannine compound, pertagnar or a mixture

Intereof

In another embodiment, the ALSase inhibitor comprises a sulfonylurea, a

imidaxolinone, or a trazcolopyrimidine sulfonylamilide. Examples of sulfonylureas

include, but are not limited to, chlorsulfuron; chlorimuon-chiyl, nicosulfuron;

primisulfuron; thifensulfuron; metsulfuron; sulfometuron-methyl, or bensulfuronmethyl. Examples of imidazolinones include, but are not limited to, imazaquin;

imazethapyr; imazapyr; or imazamethabenz. An example of a triazolopyrimidine
sulfonylamilide includes, but is not limited to, flumetsulam. In another

sulfonylamilide includes, but is not limited to, flumetsulam. In another

embodiment, the aromatic carboxylic acid comprises a phenoxyacetic acid, a

embodiment, the aromatic carboxylic acid comprises a phenoxyacetic acid, a benzoic acid, or an aryloxyphenoxypropionate. Examples of phenoxyacetic acids include, but are not limited to, 2,4-dichlorophenoxyacetic acid (2,4-5-1). for 2,4-5-trichlorophenoxyacetic acid (2,4-5-1). Examples of benzoic acids include, but are not limited to, chloramben. Examples of aryloxyphenoxypropionates include, but not limited to, chloramben.

Term	Documents
ONE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	7211299
ONES.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	343150
COMPONENT.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1766486
COMPONENTS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1938757
COMPOSITION.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1408429
COMPSN.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	449324
COMPSNS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	113691
COMPOSITIONS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	469379
POLYURETHANE[DWPI,TDBD,EPAB,JPAB,USPT,PGPB]	50716
POLYURETHANES[DWPI,TDBD,EPAB,JPAB,USPT,PGPB]	2475
POLYISOCYANATE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	52877
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comprises clomazone. comprises bromoxynil or ioxynil. In another embodiment, the isoxazolidone oryzalin or nitralin. In another embodiment, the halohydroxybenzonitrile profluralin. Examples of sulfonylaniline compounds include, but are not limited to, are not limited to, trifluralin; pendimethalin; benefin; dinitramine; fluchloralin; or herbicide or a sulfonylaniline. Examples of methylaniline herbicides include, but another embodiment, the dinitroaniline compound comprises a methylaniline but are not limited to, sethoxydim; elethodim; alloxydim; or cycloxydim. In methyl; fluazifop-butyl; or quizalatop-ethyl. Examples of cyclohexenones include, Examples of aryloxyphenoxypropionates include, but are not limited to, diclofop-ACCase inhibitor comprises an aryloxyphenoxypropionate or a cyclohexenone. inhibitor includes, but is not limited to, glyphosphate. In another embodiment, the triazine includes, but is not limited to, Metribuzin. An example of an ESPS ase prometryn; terbutryn; simetryn; or desmetryn. An example of an asymmetrical Examples of methylthio s-triazines include, but are not limited to, ametryn; include, but are not limited to, atraton; prometon; sechumeton; or simeton. cyprozine; simazine; procyazine; or propazine. Examples of methoxy s-triazines chlorinated s-triazines include, but are not limited to, atrazine; cyanazine; triazine; a methylthio s-triazine; or an asymetrical triazine. Examples of another embodiment, the triazine comprises a chlorinated s-triazine; a methoxy sbutschlor; diphenamide; napropamide; pronamide; propanil; or acetochlor. In embodiment, the chloroacetamide comprises alachlor; metolachlor; propachlor; are not limited to, diclofop-methyl; fluazifop-butyl; or quizalafop-ethyl. In another

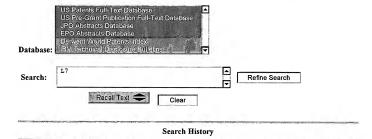
The advantages of the present invention vary with the particular application. In cellulosic plastics manufacturing, the application of this invention provides the economic benefit of fewer processing steps in addition to fewer heat histories in the production of the cellulosic plastic materials. Moreover, the process of the present



Search Results -

Term	Documents
ONE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	7211299
ONES.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	343150
COMPONENT.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1766486
COMPONENTS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1938757
COMPOSITION.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	1408429
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COMPSNS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	113691
COMPOSITIONS.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	469379
POLYURETHANE[DWPI,TDBD,EPAB,JPAB,USPT,PGPB]	50716
POLYURETHANES[DWPI,TDBD,EPAB,JPAB,USPT,PGPB]	2475
POLYISOCYANATE.DWPI,TDBD,EPAB,JPAB,USPT,PGPB.	52877
(ONE COMPONENT COMPOSITION AND POLYURETHANE [TI] AND POLYISOCYANATE AND POLYESTER).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	22

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invention permits the inclusion of a higher amount of a functional additive by providing more uniform distribution of the material in the cellulose ester.

- Another advantage of the present invention with respect to agrochemicals involves the production of a granular material with timed and sustained release properties, lower handling toxicity by virtue of reduced dusting and encapsulation of the functional additive, and increased UV light stability or hydrolytic stability of sensitive materials.
- The process of the present invention can also produce a cellulose ester blend, wherein the rate of release of the functional additive can be controlled. The cellulose ester blend produced by the process of the present invention can be used to deliver drugs and other medicaments.
- The process of the invention comprises adding a suitable functional additive, or additives package, to a solution of a first carboxylic acid and a cellulose ester. In one embodiment, the cellulose ester can be cellulose ecterac, cellulose acetase butyrate, cellulose propionate, cellulose propionate, cellulose acetase butyrate, cellulose propionate, cellulose acetase propionate, cellulose acetase propionate, carboxymenthylcelulose acetase propionate, carboximent, the cellulose acetase acetase propionate, or a mixture thereof. In one embodiment, the degree of substitution of the cellulose acetase is from 0.5 to 3.0, preferably 1.5 to 2.8, more preferably 1.8 to 2.2. In acetase is from 0.5 to 3.0, preferably 1.5 to 2.8, more preferably 1.8 to 2.2. In acetase is from 0.5 to 2.0.0 referably 1.8 to 2.2. In acetase is from 0.5 to 2.0.0 referably 1.8 to 2.8, more preferably 1.8 to 2.2. In acetase is from 0.5 to 2.0.0 referably 1.8 to 2.8.

propionyl of from 0.1 to 3.0, preferably from 1.5 to 2.0. The degree of substitution

of acetyl is from 0.01 to 1.0, preferably 0.05 to 0.5.

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<u>L7</u>	one component composition and polyurethane [ti] and polyisocyanate and polyester	22	<u>L7</u>
<u>L6</u>	one component composition and polyurethane [ti] and polyisocyanate	29	<u>L6</u>
<u>L5</u>	one component composition and polyurethane [ti] and plyisocyanate	0	<u>L5</u>
<u>L4</u>	one component composition and polyurethane [ti] and tetra-n-butyl titanate	0	<u>L4</u>
<u>L3</u>	one component composition and polyurethane [ti]	37	<u>L3</u>
<u>L2</u>	one component composition and polyurethane	222	<u>L2</u>
<u>L1</u>	one component composition	932	<u>L1</u>

END OF SEARCH HISTORY

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The selection of the first said can vary depending upon the end-use of the resulting cellulose ester blend. The mixture of carboxylic said and water is chosen to dissolve the cellulose ester and functional additives. In one embodiment, the first acid is a carboxylic said. In a preferred embodiment, the first carboxylic said is an aqueous carboxylic said. In a preferred embodiment, the first carboxylic said is an agueous propionic said, buyric said, or a mixture thereof, optionally, containing an amount of water in sufficient quantities to dissolve the cellulose ester and functional additives. Preferredby, the first said is present in the amount of 60 to 90 % by

61

More preferably, the first acid is present in the amount of 10 to 90 % by weight propionic acid or buryric acid to 30 % by weight water.

weight and the water is from 2 to 15 % by weight of the admixture in step (a).

The functional additive is present in the amount of 1 to 50 % by weight, preferably 1 to 20 % by weight, of the cellulose exter of step (a).

cellulose ester and first carboxylic soid followed by stirring the admixture to dissolve the functional additive to make a homogeneous solution. As described above, preferred functional additives include plasticizers, UV stabilizers, and dyes. In one embodiment, the amount of the plasticizer(s) is from 1 to 40 % by weight of the cellulose ester in step (a), preferably from 15 to 25 % by weight of the plasticizer. In a preferred embodiment, the functional additive is a plasticizer.

In one embodiment, the functional additive is added to a solution of the

Once the cellulose ester and functional additive have been dissolved, the admixture is contacted with an aqueous precipitating agent in order to coprecipitating the cellulose estert/functional additive blend. The term "aqueous precipitating agent" is defined as a solution comprising water and, optionally, one or more other or components. In one embodiment, the aqueous precipitating agent is water. In



Search Results - Record(s) 1 through 22 of 22 returned.

1. Document ID: US 20020103292 A1

L7: Entry 1 of 22

File: PGPB

Aug 1, 2002

PGPUB-DOCUMENT-NUMBER: 20020103292

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020103292 A1

TITLE: Aqueous <u>polyurethane</u> dispersions containing modified hydrazide groups and their use in one-component thermoset compositions

PUBLICATION-DATE: August 1, 2002

INVENTOR - INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Blum, Harald	Leverkusen	PA	DE	
Gindin, Lyubov K.	Pittsburgh	PA	US	
Henderson, Karen M.	Coraopolis	PA	US	
Jacobs, Patricia B.	Pittsburgh	TX	US	
Lee, Sze-Ming	Houston	OH	US	
Long, Brian	Clarington	PA	US	
Sylvester, Robert A.	Carnegie	PA	US	
Wicks, Douglas A.	Mt. Lebanon		US	

US-CL_CURRENT: 524/845; 522/400, 523/402, 523/414, 523/415, 524/501, 524/502, 524/507, 524/505, 524/508, 524/589, 524/599, 524/591, 524/591, 524/593, 524/600, 524/600, 524/606, 524/600, 524/60

Full Title Chatton Front Review Classification Date Reference Sequences Attachments Claims KMIC | Draw Desc Image

2. Document ID: US 20020068800 A1

L7: Entry 2 of 22

File: PGPB

Jun 6, 2002

PGPUB-DOCUMENT-NUMBER: 20020068800 PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020068800 A1

TITLE: Polyurethanes containing secondary amide groups and their use in one-component thermoset compositions

PUBLICATION-DATE: June 6, 2002

INVENTOR - INFORMATION:

SUBSTITUTE SHEET (RULE 26)

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time sufficient to undergo biodegradation and release the additive.	
in the proximity of the target for the additive and for a period of	
(a) sum (a) successful to successful to sum (a) sum (b) successful to su	
wherein components (a) and (b) form a controlled release matrix system,	52
(-)	
(b) at least one pharmaceutical additive,	
(3)	
(a) at least one biodegradable cellulose ester; and	
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dispensing the controlled release matrix system, comprising:	
pharmaceutical additive in the proximity of a target for the additive, comprising	
This invention also relates to a method for controlled release of a	
sufficient to undergo biodegradation and release the additive.	91
in the proximity of the target for the additive and for a period of time	
wherein components (a) and (b) form a controlled release matrix system,	
(b) at least one agricultural additive,	01
(a) at least one biodegradable cellulose ester, and	
further comprising:	
agricultural additive comprising dispensing the controlled release matrix system,	9
Additionally, this invention relates to a method for controlled release of an	-
and the property of the proper	
wherein the blend is a controlled release matrix system.	
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NAME	CITY	STATE	COUNTRY	RULE-47
Gambino, Charles A.	McDonald	PA	US	
Henderson, Karen M.	Coraopolis	PA	US	
Jacobs, Patricia B.	Pittsburgh	PA	US	
Lee, Sze-Ming	Houston	TX	US	
Sylvester, Robert A.	Carnegie	PA	US	

US-CL-CURRENT: 525/456

Full Tittle Citation Front Review Classification Date Reference Sequences Attachments Claims KMC Draw Desc Image

3. Document ID: US 20020068790 A1

L7: Entry 3 of 22 File: PGPB Jun 6, 2002

PGPUB-DOCUMENT-NUMBER: 20020068790 PGPUB-FILING-TYPE: new DOCUMENT-IDENTIFIER: US 20020068790 A1

TITLE: Aqueous <u>polyurethane</u> dispersions containing pendant amide groups and their use in one-component thermoset compositions

PUBLICATION-DATE: June 6, 2002

INVENTOR-INFORMATION:

NAME CITY STATE COUNTRY RULE-47 Gindin, Lyubov K. Pittsburgh PA US Henderson, Karen M. Coraopolis PA US Houston TX US Lee, Sze-Ming us Long, Brian Clarington OH

US-CL-CURRENT: 524/589; 524/839

Full Title Citation Front Review Classification Date Reterence Sequences Attachments

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4. Document ID: US 20020068789 A1

L7: Entry 4 of 22 File: PGPB Jun 6, 2002

PGPUB-DOCUMENT-NUMBER: 20020068789 PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020068789 A1

TITLE: Aqueous polyurethane dispersions containing secondary amide groups and their use in one-component thermoset compositions

PUBLICATION-DATE: June 6, 2002

INVENTOR-INFORMATION:

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(q)

system, comprising a homogeneous mixture of: In addition, this invention further relates to a controlled release matrix

- at least one biodegradable cellulose ester; and (a)
- (q) at least one agricultural additive or pharmaceutical additive,
- wherein components (a) and (b) form a controlled release matrix system.
- This invention further relates to a controlled release matrix system,
- consisting essentially of a homogeneous mixture of:
- at least one biodegradable cellulose ester; and (a)
- at least one agricultural additive or pharmaceutical additive,
- wherein components (a) and (b) form a controlled release matrix system.
- blends that contain functional additives. It also provides a controlled release matrix This invention provides for an efficient method of preparing cellulose ester
- Additional advantages of the invention will be set forth in part in the

system than can release a functional additive.

pointed out in the appended claims. It is to be understood that both the foregoing realized and attained by means of the elements and combinations particularly be learned by practice of the invention. The advantages of the invention will be 25 description which follows, and in part will be obvious from the description, or may